Tucson Water Conservation Program

2021 ANNUAL REPORT





CITY OF TUCSON | TUCSON WATER

Water Conservation Program
2021 Annual Report

MAY 2022

City of Tucson

Regina Romero, Mayor

Michael Ortega, City Manager

City Councilors

Lane Santa Cruz, Ward One

Paul Cunningham, Ward Two

Kevin Dahl, Ward Three

Nikki Lee, Ward Four

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Steve Kozachik, Ward Six

Prepared by

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Acknowledgments

Thank you to the Public Information & Conservation Staff and the GIS Staff at Tucson Water for helping to execute our programs and gather data for this annual report. We are grateful to our partners who make our high-quality conservation program possible, by working in our community every day, educating and providing services to our customers. This report reflects our collective conservation ethic and commitment to a thriving Tucson.

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2021 Conservation Snapshot

In 2021, total potable water use was 116 GPCD with a residential GPCD of 77, continuing a decade-long trend. The conservation fee, now in its 13th year, has allowed Tucson Water to offer our customers high-quality conservation and education programs and robust efficiency incentives.

In 2021, programs funded by the conservation fee have resulted in:

- 41.9 million gallons conserved
- $1.18 million invested in rebates and incentives
- 2,482 HET and urinal installations
- 330 rainwater harvesting and gray water installations

To date, programs funded by the conservation fee have resulted in:

- More than 4.2 billion gallons (12,926 acre-feet) conserved
- More than $14.9 million invested in rebates and incentives
- Over 68,000 HET and urinal installations, including over 7,800 free toilets for low-income customers
- Over 3,000 rainwater harvesting and gray water installations, including 262 subsidized systems for low-income customers

In 2021, despite continued challenges to in-person outreach and education, our partner education programs reached over 35,000 students, teachers and adults.

In the last 13 years with a dedicated conservation fund, our education partners have reached nearly 600,000 students and community members and Tucson Water Zanjeros have conducted over 18,000 water audits for customers.

Milestones for 2021 include:

- Enhancing the customer experience through electronic audit reports, post-audit online surveys, online audit scheduling and continued progress toward online rebate processing.
- The Zanjeros conducted nearly 800 water audits for both residential and commercial customers, and supported audits of over 100 city facilities.
- Implementation of the City's Drought Preparedness and Response Plan, completing Tier 0 measures and developing Tier 1 measures.
- Development of new resources like the Landscape Maintenance Manual, the Leak Detection & Flow Devices Guide, and a new, simplified Landscape Watering Schedule.
- The Water Conservation Program 10-Year Savings Projection was completed as part of the One Water Master Plan.
- Review of the Commercial Rainwater Harvesting Ordinance and the Residential Gray Water Ordinance, as requested by CWAC and as directed by Mayor & Council.

Upcoming focus areas for 2022 include:

- Launch a new rebate platform and update rebate policies to enhance the customer experience and maximize water conservation savings.
- Continue pilot projects on leak detection and landscape transformation for HOA customers.
- Prepare for future stages of Drought Preparedness and Response Plan implementation, focusing on:
    - Disseminating new tools to assist residential and non-residential customers with water efficiency targets, including targeted outreach to large landscape customers.
    - Additional communication and messaging including a monthly feature in the Water Matters newsletter.
    - Providing interdepartmental support for water efficiency opportunities based on audits and monthly water use information.
- Evaluate low-income incentive programs including rainwater harvesting, high-efficiency toilets, emergency repairs and consider additional program needs.

Conservation Program Budget

This operating report describes the expenditures and activities of the Tucson Water Conservation Program for July 1, 2020 through June 30, 2021, referred to as Fiscal Year (FY) 20-21. Although this annual report has shifted to a calendar year timeframe, financial reporting will still be provided on a fiscal year basis to ensure data accuracy and verification from business services. Funding for the Conservation Program is collected by a conservation fee assessed on all potable water sales and operates out of a separate fund within the Tucson Water Department. Table 1 illustrates funds raised and the expenditures since the inception of the Water Conservation Fund in FY 08-09. The fund was established by the Mayor & Council through adoption of ordinance 10555 on May 20, 2008.

The Conservation and Education subcommittee of CWAC reviews and advises the Mayor and Council on the budget and programs funded by the water conservation fee. The subcommittee meets monthly with staff and makes recommendations to the main CWAC body.

Water Conservation Program Expenditures

The Conservation Fund expenditures listed below and shown in Table 4 (page 13) reflect a financial summary of the fiscal year prepared by the Business Services division of Tucson Water. This report also features rebate program summaries of the quantity, cost and estimated savings of rebates processed during the fiscal year. The program numbers provided in the following sections are for operating purposes and not intended to reconcile with financial reports. The water conservation fund can be separated into seven main categories as shown in Figure 1 with a total fund expenditure of $3,327,383.

The seven categories are:

1. Operating ($402,291)

   Salaries and wages for permanent employees:
   a. 1 Conservation Manager
   b. 1 Water Conservation Specialist
   c. 1 Lead Planner
   d. 1/2 Urban Landscape Manager
   e. 6 Zanjeros (including 1 Supervisor)
2. Professional Services ($1,532,351)

   Contractors that support the conservation program through research and implementation of education, commercial water audits, and low-income toilet and rainwater harvesting programs
3. Rebate Programs ($1,179,470)

   Incentive and rebate programs designed offset customer expense of implementing water efficiency retrofits.
4. Outreach & Marketing ($6,432)

   Public relations and advertising to promote conservation programs.
5. Fixtures & Devices ($53,350)

   Conservation devices to support program outreach and promotional materials including store displays and conservation giveaway items.
6. Miscellaneous ($3,619)

   Travel, training, memberships, printing, subscriptions, uniforms, computers, etc.
7. Administration Fee ($149,870)

   Paid to the City of Tucson for business and administrative services.

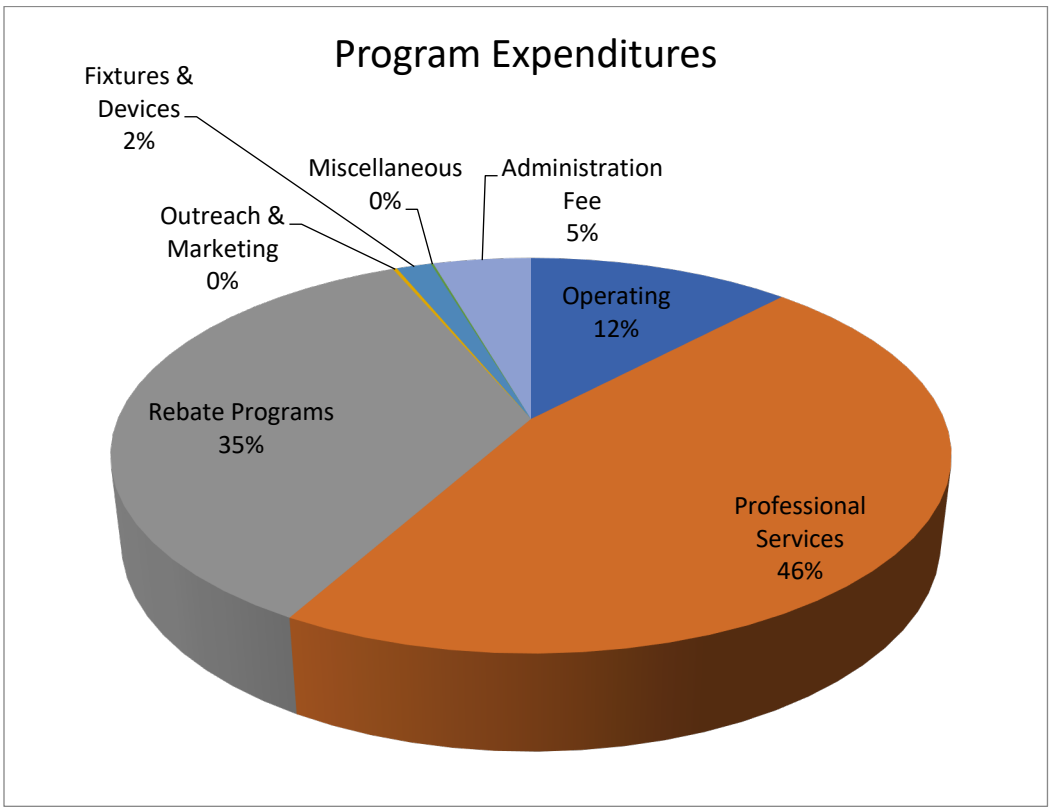

Figure 1: FY 20-21 Water Conservation Program Expenditures by Percentage.

Fiscal Year	Conservation Fee ($/ccf)	Approved Budget	Expenditures	Revenue
FY 08/09	$ 0.03	$ 997,000	$ 794,462	$ 1,217,280
FY 09/10	$ 0.04	$ 997,000	$ 831,883	$ 1,716,880
FY 10/11	$ 0.05	$ 1,086,690	$ 1,720,075	$ 2,124,838
FY 11/12	$ 0.07	$ 2,902,630	$ 1,795,082	$ 2,816,241
FY 12/13	$ 0.07	$ 3,356,820	$ 2,727,541	$ 2,830,967
FY 13/14	$ 0.07	$ 2,950,000	$ 2,725,288	$ 2,832,950
FY 14/15	$ 0.07	$ 3,050,000	$ 2,771,450	$ 2,726,208
FY 15/16	$ 0.08	$ 3,540,250	$ 2,785,621	$ 3,000,905
FY 16/17	$ 0.08	$ 3,540,250	$ 3,445,812	$ 3,035,932
FY 17/18	$ 0.09	$ 3,540,250	$ 3,108,333	$ 3,524,361
FY 18/19	$ 0.10	$ 3,895,620	$ 3,036,034	$ 3,613,761
FY 19/20	$ 0.10	$ 3,829,450	$ 3,776,282	$ 3,766,785
FY 20/21	$ 0.10	$ 3,707,690	$ 3,327,383	$ 4,019,836

Table 1: Water Conservation Program Budget Historic Overview, reported on a Fiscal Year.

Conservation Program Annual Updates

Rebate Administration

No administrative or policy changes were made to the rebate programs during this fiscal year. Most rebates continue to be issued as bill credits since the bulk of rebates processed are for toilets and clothes washers. Residential rainwater harvesting rebates, gray water rebates and commercial rebates are issued as checks. Staff continued to work with the city IT department on the development of an online platform for rebate processing. This will allow customers to submit an application and rebate paperwork online instead of by mail. The anticipated launch of the platform is mid-2022, along with rebate policy updates.

GPCD Trend - Gallons per Capita per Day

Tucson Water has a long history of planning and developing water supplies for today and the future. This has been accomplished by increasing the use of renewable Colorado River water, using recycled water for irrigation purposes, expanding the use of rain and stormwater, and supporting one of the longest running conservation programs in the nation. As a result, Tucsonans are now using the same total amount of water as in mid-1980s, while population has increased by more than 200,000 and service connections have increased by more than 75,000. This fact alone is a strong indicator that water is being used more efficiently than ever.

A common metric for comparing annual water use and water conservation effectiveness is GPCD, which is derived by dividing the number of people served by the amount of water produced. Table 2 illustrates the reduction in GPCD compared to a rise in population over the last decade; Figure 2 illustrates total and residential GPCD trends since 2000.

Year	Total Potable GPCD	Residential GPCD*	Population
2000	165	112	635,073
2001	165	109	645,780
2002	170	114	655,834
2003	166	111	667,287
2004	163	109	678,418
2005	161	107	686,540
2006	159	104	703,157
2007	157	103	703,157
2008	148	99	705,271
2009	146	100	705,316
2010	139	94	705,817
2011	136	92	706,118
2012	131	89	708,863
2013	127	88	712,698
2014	124	85	715,260
2015	117	80	717,875
2016	117	81	721,205
2017	122	82	725,461
2018	116	80	731,236
2019	111	76	735,610
2020	119	82	739,485
2021	116	77	744,528

Table 2: Annual GPCD (not including reclaimed system deliveries) and estimated Tucson Water service area population from 2000 to 2021. Residential GPCD includes multifamily class water use.

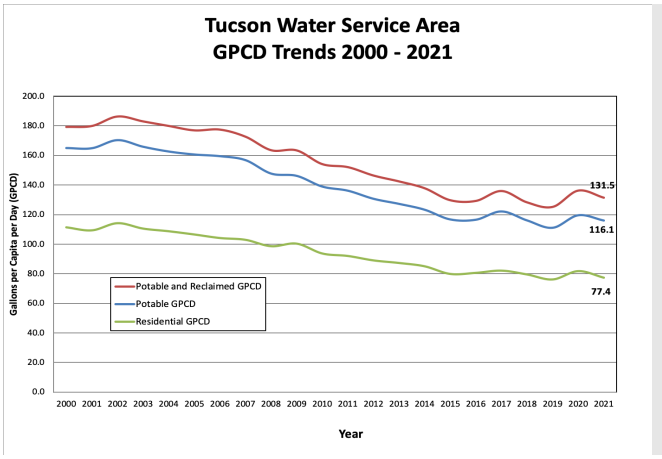

Figure 2: Total and Residential GPCD from 2000 to 2021

National Updates

Income Tax Parity Issue

Currently any rebates $600 or more are subject to income tax and applicants must submit a W-9 form with their application before Tucson Water can process their rebate. The W-9 form requires submitting a social security or tax identification number. The applicant will be issued a 1099-MISC for miscellaneous income to be filed with their tax return. Tucson Water continues to support legislative action to change the tax code to remove the taxable income requirement and create parity between water and energy conservation programs.

EPA WaterSense Program

Tucson Water, along with over 2,000 organizations across the county, is a proud partner of the EPA's WaterSense program, established in 2006. WaterSense has helped American consumers save over 5.3 trillion gallons of water and more than $108 billion in water and energy bills. Additionally, because of the close connection between energy and water, WaterSense-labeled products have saved 603 billion kilowatt hours, enough to supply a year's worth of power to more than 47.7 million homes.

Like many water providers across the county, Tucson Water depends on the WaterSense program's product labeling criteria to identify rebate-eligible products. WaterSense has ensured national consistency in rebate programs and product quality that meet rigorous standards; high-quality products and a common language, similar to EnergyStar, have elevated the conversation about water efficiency and conservation to a national platform. Tucson Water continues to report data annually to WaterSense and contributes to the national savings numbers reported.

Department of Energy Standards Updates

In 2020 Tucson Water provided written comments to the U.S. Department of Energy on two proposed changes to regulatory standards for clothes washers and showerheads that would loosen standards by creating new, unregulated product categories, resulting in increased water use and consumer costs. In late 2020 the proposed changes were approved by the agency, but the decision was reversed in 2021and the original, more efficient standards remain in place.

Service Area Distribution of Program

Distribution of Programs by Customer Class

A stated policy of the conservation program is to *"provide an equitable distribution of conservation benefits throughout customer classes and the community."* Water use, savings achieved through rebates and the expenditures for these rebates are broken out by customer class in Figures 3, 4 and 5.

Programs for single-family customers include high-efficiency toilet, high-efficiency clothes washer, gray water, and rainwater harvesting rebates. Programs for multi-family customers include high-efficiency toilet and customized rebates. Programs for commercial customers include high-efficiency toilet, high-efficiency urinal and customized commercial rebates.

Distribution of Programs by Ward

The geographical distribution of residential rebate programs by Ward, compared to the percent of customers by Ward illustrates each rebate program's geographic distribution and saturation. This data, paired with a service area map showing all rebate recipients for a given program, provides a clear picture of rebate program participation.

Ward demographics are important considerations when developing and improving a program, as well as the age of homes and businesses. For example, the single-family HET program will not show a large percentage of installations where a majority of the homes were built after 1991; Ward 4 is a good example of this pattern.

Additionally, combining the impacts of regular rebate and low-income incentive programs provides a more holistic understanding of program uptake in specific parts of our community. For example, the single-family HET rebate program and the low-income HET direct install program have unequal concentrations of installations in the different jurisdictions. However, combined, the two programs illustrate a more uniform distribution throughout the service area as shown in Figure 11.

This information informs program planning to identify areas of potential savings that can be targeted with increased or modified outreach and new or modified programs that will reach underserved communities.

Maps illustrating the geographic distribution of rebate programs are now available on the website. To access the rebate program map, go to: tucsonaz.gov/water/conservation.

Navigate to the section titled Water Conservation and Efficiency Annual Reports.

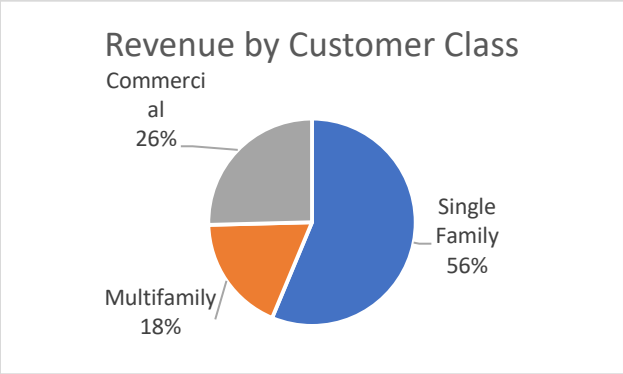

Figure 3: FY21 Revenue by Customer Class

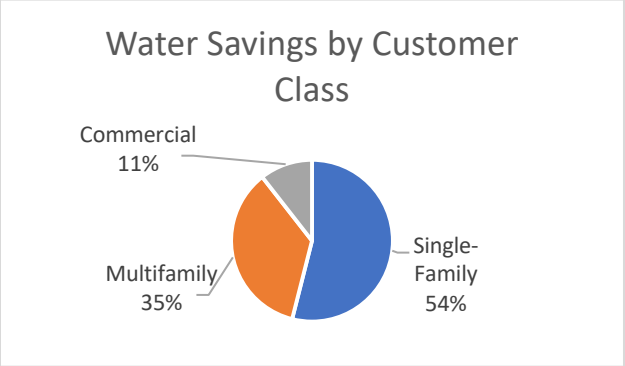

Figure 4: Percent Cumulative Water Savings by Customer Class since 2009. Savings are determined for each program (see program details starting on p. 14) and totaled by customer class depending on the type of rebate.

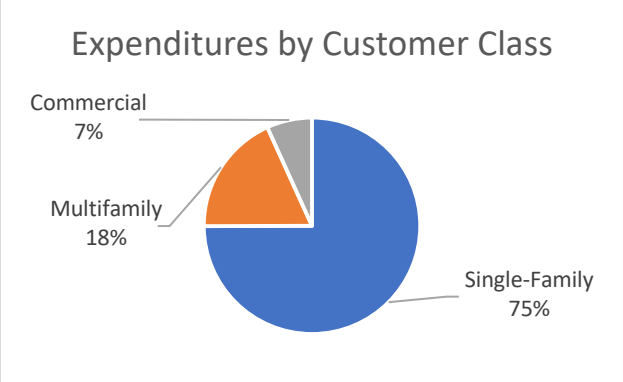

Figure 5: Percent of Cumulative Expenditures by Customer Class since 2009. Expenditures are determined for each program based on the dollar amount of each rebate given (see program details starting on p. 18) and totaled by customer class depending on the type of rebate.

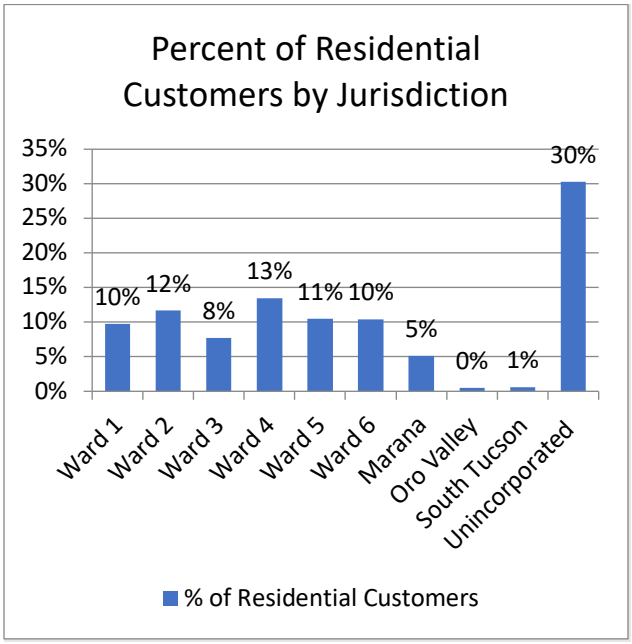

Figure 6: Percent of Residential Customers by Jurisdiction, broken out by Ward within city limits and outside of the city limits.

Conservation Program Activity

Rebates by Year

Table 3 reports the rebates processed for each incentive program by fiscal year and Table 4 reports the expenditures for each incentive program.

Water Savings

Tucson Water calculates water savings for each incentive program using a mix of field research and customer consumption analysis. Savings for each program are calculated with the known information about fixture usage and behavior patterns. Specific program savings numbers are described in the following sections that discuss rebate programs in greater detail. Annual water savings are calculated for each program by multiplying the number of fixtures replaced with an average annual savings number based on either program evaluation data or published research. These numbers reflect the savings expected in a given program year based on the number of installations that were completed, so this savings number fluctuates annually. Then cumulative savings are calculated for each program by summing the annual savings calculated for each year a given program has been running. This calculation is done for the expected lifetime of the fixtures, which is based on industry research for fixture devices and has been adopted by conservation organizations such as the Alliance for Water Efficiency.

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total
Single-Family HET	1,794	2,774	2,166	1,762	2,477	2,279	2,034	2,202	1,659	1,655	1,403	1,210	815	**24,230**
Low-Income HET	58	1,132	202	519	926	946	897	764	675	433	576	420	313	**7,861**
Multi-Family HET	149	376	282	1,938	5,097	4,382	5,469	1,577	3,685	3,063	3,271	860	982	**31,131**
Commercial HET	116	351	586	195	259	172	860	191	269	188	193	365	105	**4,551**
High-Efficiency Urinal			16	0	43	282	411	12	28	2	0	8	267	**1,069**
Clothes Washer							509	1,774	1,713	1,434	1,234	1,371	1,090	**9,125**
Gray Water			7	9	11	21	41	25	28	15	16	19	20	**212**
Irrigation Upgrade	1	4	7	8	2	9	0	1	0	1				**33**
Commercial Upgrade								31	7	3	3	0	1	**45**
Rainwater Harvesting				140	314	295	346	311	467	343	316	318	310	**2,850**
Emergency Repairs											87	232	181	**500**

Table 3: Total Rebates by Calendar Year; gray cells indicate program had not started in that year.

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total
Single-Family HET	$153,959	$232,598	$177,966	$144,544	$201,949	$184,553	$160,419	$165,381	$122,184	$123,475	$101,850	$88,500	$58,200	**$1,915,578**
Low-Income HET*	$30,090	$450,326	$ 77,772	$188,434	$342,213	$311,397	$293,682	$248,278	$228,988	$165,807	$270,936	$287,154	$135,560	**$3,030,638**
Multi-Family HET	$11,920	$28,554	$21,259	$190,762	$504,264	$434,362	$523,699	$118,255	$276,375	$229,725	$245,325	$64,350	$73,650	**$2,722,500**
Commercial HET	$10,378	$31,211	$49,902	$17,336	$20,964	$14,210	$75,995	$16,125	$31,050	$14,700	$14,475	$29,400	$114,000	**$439,746**
High-Efficiency Urinal	$ -	$ -	$3,200	$ -	$19,300	$141,000	$89,700	$2,400	$5,800	$400	$ -	$1,600	$50,200	**$313,600**
Clothes Washer	$ -	$ -	$ -	$ -	$ -	$ -	$101,800	$354,600	$342,400	$287,200	$246,800	$274,200	$218,000	**$1,825,000**
Gray Water	$ -	$ -	$1,208	$1,471	$5,644	$8,323	$18,177	$12,473	$17,844	$11,767	$10,301	$11,477	$11,437	**$110,122**
Irrigation Upgrade	$2,823	$5,743	$35,393	$52,110	$3,532	$80,156	$600	$664	$ -	$8,869	$ -	$ -	$ -	**$189,889**
Commercial Upgrade	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$32,484	$3,450	$7,800	$14,114	$ -	$ -	**$ 64,848**
Rainwater Harvesting	$ -	$ -	$ -	$163,838	$399,610	$333,896	$428,251	$385,979	$524,189	$501,314	$450,119	$433,350	$417,473	**$4,038,019**
Emergency Repairs*	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$27,973	$110,062	$102,255	**$240,289**
Total	**$209,170**	**$748,432**	**$366,699**	**$758,495**	**$1,497,475**	**$1,507,897**	**$1,692,324**	**$1,336,639**	**$1,552,280**	**$1,351,057**	**$1,381,894**	**$1,300,093**	**$1,180,774**	**$14,909,428**

Table 4: Total Incentive Program Expenditures by Calendar Year; gray cells indicate program had not started in that year.

*Includes contracted services to execute limited-income program.

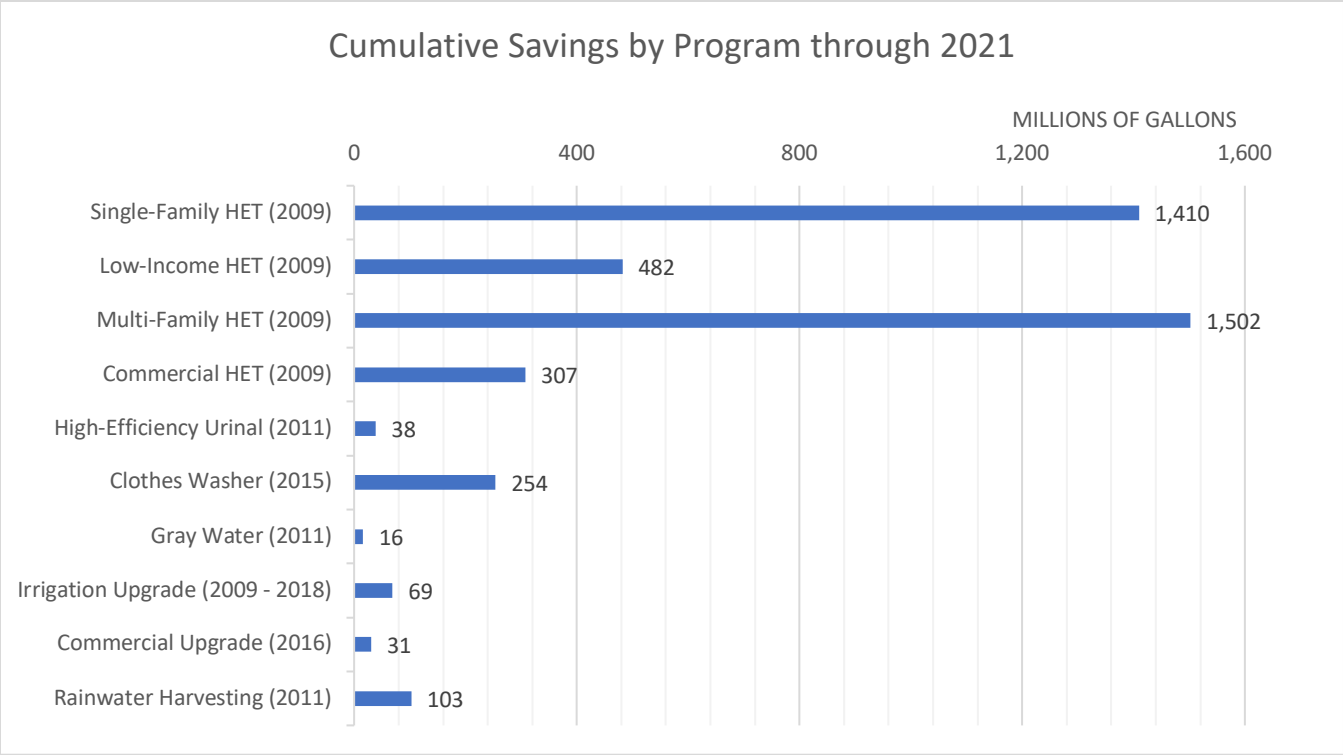

Figure 7: Cumulative Water Savings shown by program achieved from Tucson Water's Incentive Programs.

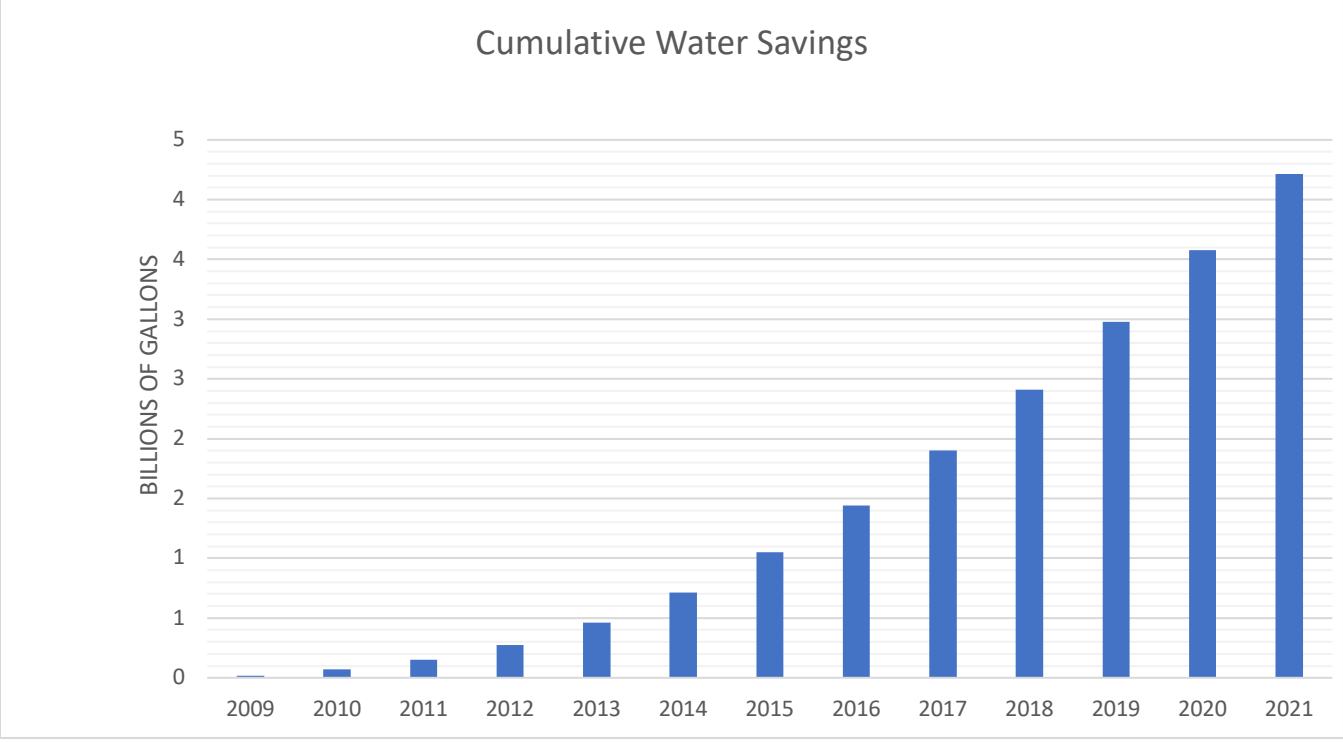

Figure 8: Total program water savings calculated from incentives since Conservation Fee inception.

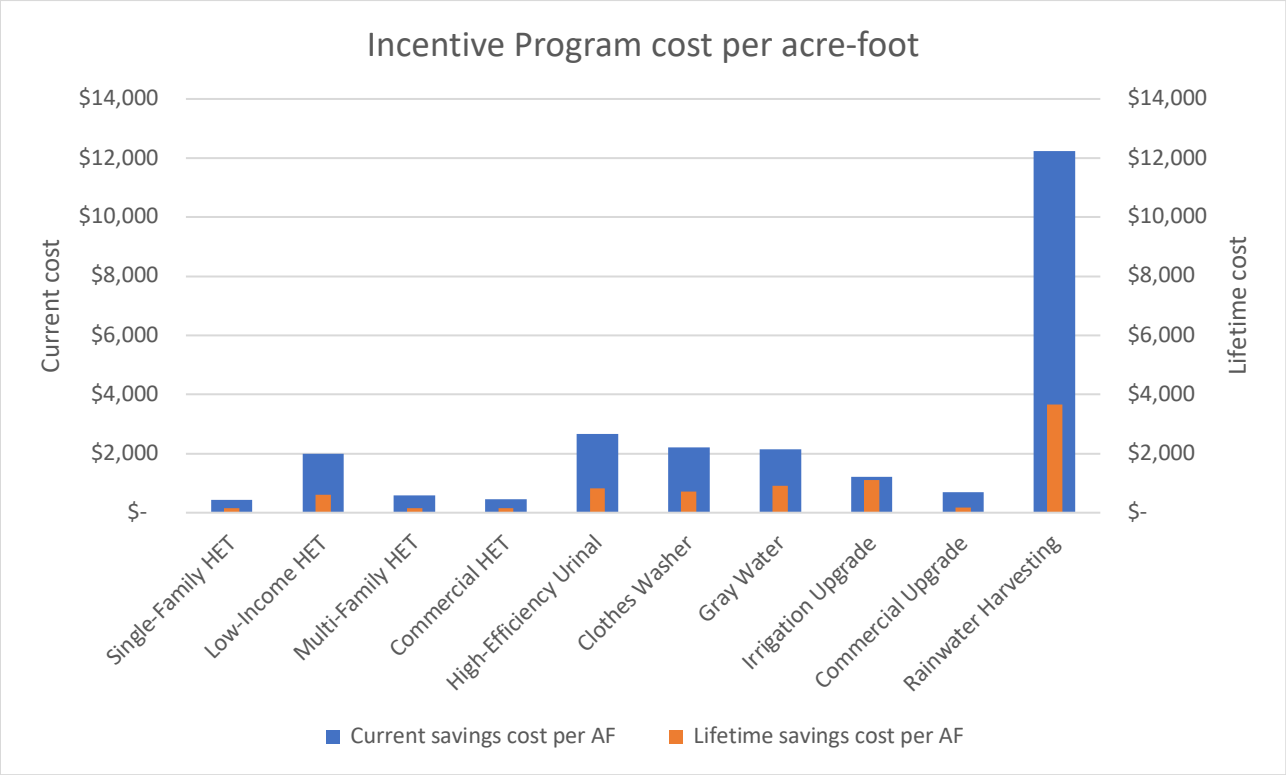

Table 5: Useful life of fixtures used to calculate cost per savings; all numbers taken from the Alliance for Water Efficiency except for Rainwater Harvesting, which was taken from Batchelor, C., Fonseca, C. and Smits, S., 2011. *Life-cycle costs of rainwater harvesting systems.* <http://www.irc.nl/op46>.

Incentive Program	Useful Life (years)
Single-Family HET	25
Low-Income HET	25
Multi-Family HET	25
Commercial HET	25
High-Efficiency Urinal	25
Clothes Washer	15
Gray Water	15
Irrigation Upgrade	10
TAP Commercial Upgrade	20
Rainwater Harvesting	20

Table 6: Cost per acre-foot of savings per program, to-date and for projected fixture life.

Incentive Programs

Single-Family HET Rebate

Implementation date: July 7, 2008
Modified: March 1, 2015; July 1, 2016

This rebate program is designed to encourage single-family residential customers to retrofit older 3.5 or more gpf toilets with high-efficiency models. Only WaterSense labeled, high-efficiency toilets qualify for the rebate, which use 1.28 gpf or less in homes built before 1991 in the City and 1994 in Pima County. *Staff is reviewing current toilet specifications as more efficient models emerge on the market and the qualification date now prevents several decades of houses from being eligible for the rebate.*

Program Activity:	2021	Cumulative
Number of HETs Retrofit:	815	24,230
Expenditure:	$ 58,200	$ 1.9 million
Estimated Gallons Saved:	6 million	1.4 billion
Estimated Acre-Feet Saved:	18	4,326

Customer Payback: The average cost of HETs purchased by participants was $197. The cost of qualifying toilets typically starts at $85. Total annual water and sewer savings per retrofit is $72 with, on average, a payback period of 1.7 years, after the $75 rebate per toilet.

Outreach and Promotion: Point-of-sale displays are provided to any stores that want them; currently over 40 retailers are promoting the HET rebate programs. Tucson Water works with each retailer to provide display options that work with their merchandizing. Displays are stocked at 20 stores monthly with brochures and rebate applications. Additionally, rebates are promoted throughout the year through Tucson Water's monthly newsletter included in the utility services statement, at community events, on social media and through community partners.

Low-Income HET Direct Install

Implementation date: October 2009
Modified: October 2019

This efficiency program offers free high-efficiency toilet replacements for qualifying low-income homeowners who are Tucson Water customers. The program replaces toilets in homes built prior to 2011 with ultra high-efficiency toilets, also known as premium toilets, flushing 1.1-gpf or less. Since many of these older toilets have other functional problems that cause chronic leaking or water flow, the effectiveness of the program is compounded by resolving these issues.

Program Activity:	2021	Cumulative
Number of HETs Retrofit:	313	7,861
Expenditure:	$ 135,560	$ 3 million
Estimated Gallons Saved:	2.7 million	482 million
Estimated Acre-Feet Saved:	8	1,479

Customer Payback: The payback is immediate because the HET and installation are free to the customer. Therefore, the

participant will experience, on average, an annual savings of $72.

Income Eligibility: Eligibility guidelines were updated in 2020 to align with other assistance programs offered by Tucson Water and Pima County. The new guidelines are based on Federal Poverty Level (FPL) determined by the U.S. Department of Health and Human Services (HHS). Conservation low-income programs use 200% of FPL as the qualification threshold, which is updated each year by HHS. This program is available to all owner-occupied households that verify an annual income of 200% FPL or less.

Outreach and Promotion: Tucson Water utilizes the program contractor, CHRPA, to execute this program and promotes this program as one of several low-income services provided by the utility, along with promotion of other residential rebate programs.

Income Eligibility: Eligibility guidelines were updated in 2020 to align with other assistance programs offered by Tucson Water and Pima County. The new guidelines are based on Federal Poverty Level (FPL) determined by the U.S. Department of Health and Human Services (HHS). Conservation low-income programs use 200% of FPL as the qualification threshold, which is updated each year by HHS. This program is available to all owner-occupied households that verify an annual income of 200% FPL or less.

Low-Income HET Retrofit Savings:
The low-income HET savings of 23.5 gpd per unit (8,577.5 gallons per annum) comes from an analysis of program participants completed in 2014. This analysis compared water use between 2011 and 2014 of low-income households that had participated in the HET rebate program in 2011.

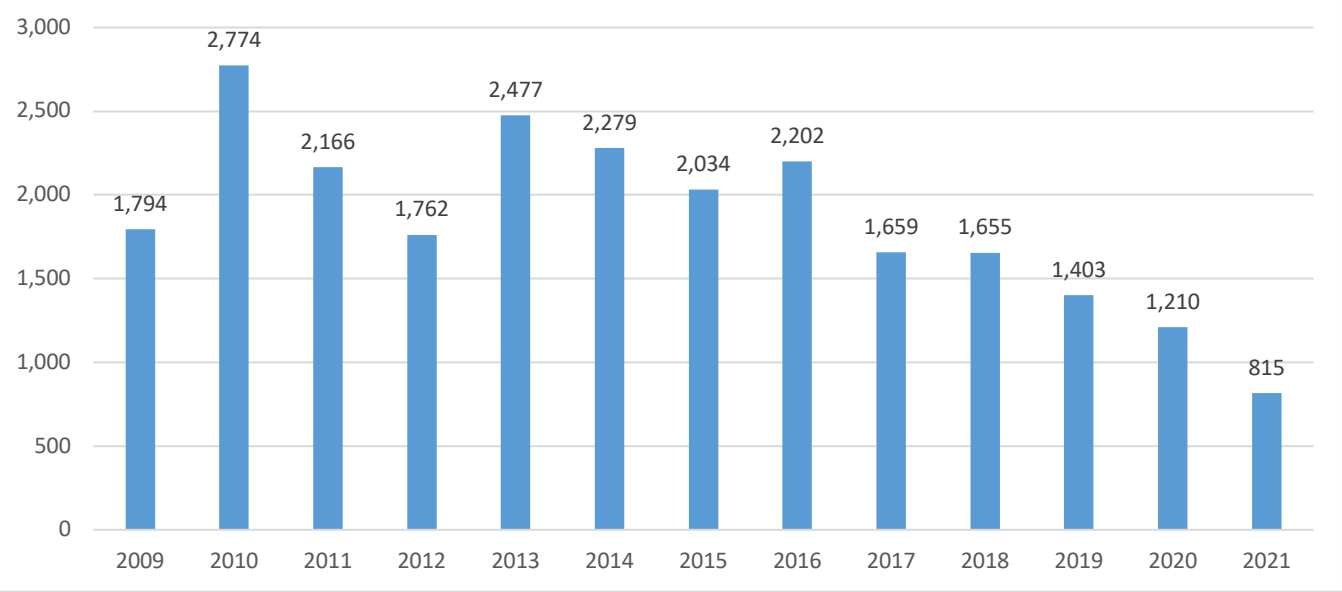

Figure 9: Single-Family HET Rebates by Year

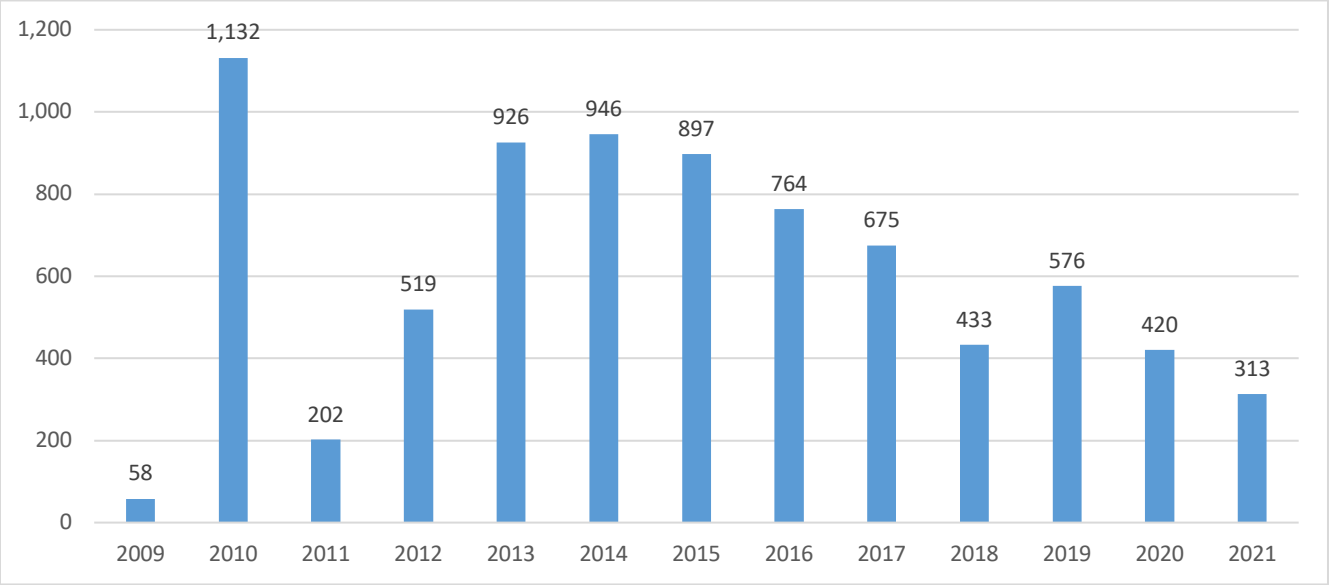

Figure 10: Low-Income HET Direct Installs by Year

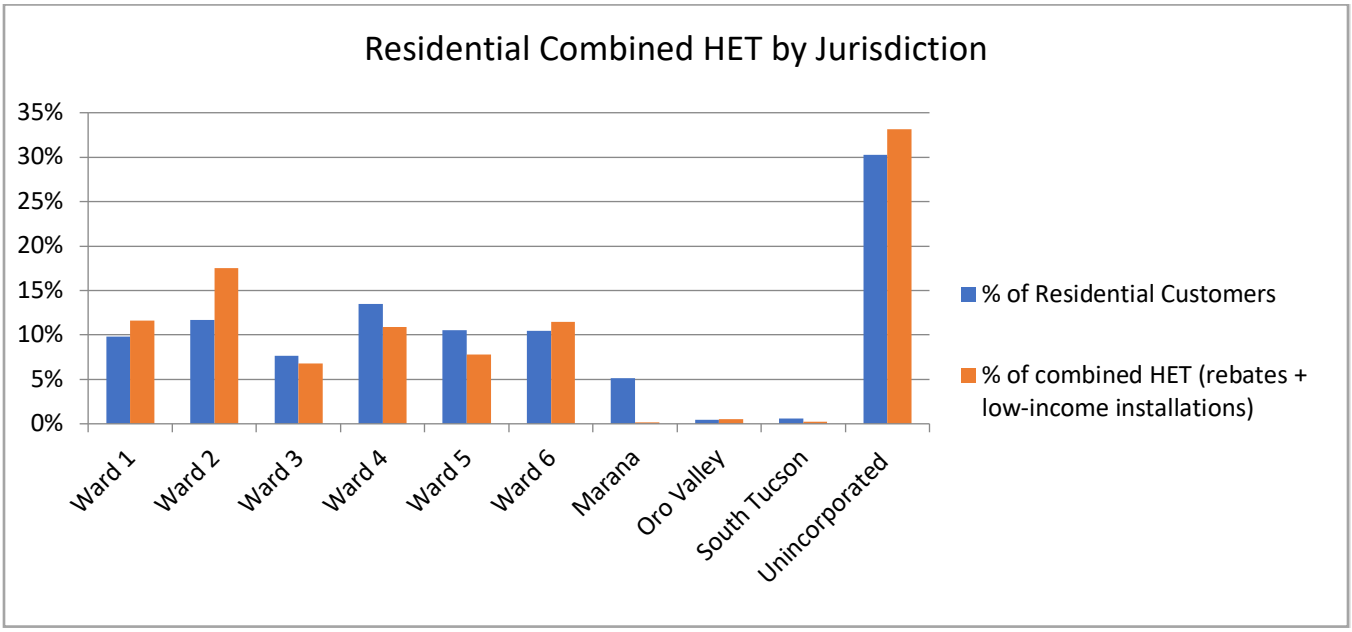

Figure 11: Combined single-family high-efficiency toilets, including rebates and direct installations for low-income customers compared to the percent of single-family customers in each ward or other political boundary served by Tucson Water.

Multi-Family HET Rebate

Implementation date: July 7, 2008
Modified: March 1, 2015

This rebate program is designed to encourage multi-family customers to retrofit older 3.5 or more gpf toilets with high-efficiency models. Only WaterSense labeled, high-efficiency toilets qualify for the rebate, which use 1.28 gpf or less.

Program Activity:	2021	Cumulative
Number of HETs Retrofit:	982	31,131
Expenditure:	$73,650	$2.7 million
Estimated Gallons Saved:	7.3 million	1.5 billion
Estimated Acre-Feet Saved:	224	4,611

Customer Payback: The average cost of multi-family HETs purchased by participants was $114. The cost of qualifying toilets typically starts at $75. Total annual water and sewer savings per retrofit is $80 with, on average, a payback period of less than half a year, after the $75 rebate.

Outreach and Promotion: Promotion of this program is largely done at a staff level by providing a customized analysis to customers interested in this rebate program. The analysis considers current water usage, a fixture count and behavior assumptions to provide each customer with return-on-investment calculations to help customers make informed decisions. Information is also provided at point-of-sale displays at retailers and plumbing suppliers, similar to our residential HET rebate.

Multi-Family HET Retrofit Savings:
The single-family savings number of 20.5 gpd (7,482.5 gallons per annum) is used to calculate multi-family savings estimates.

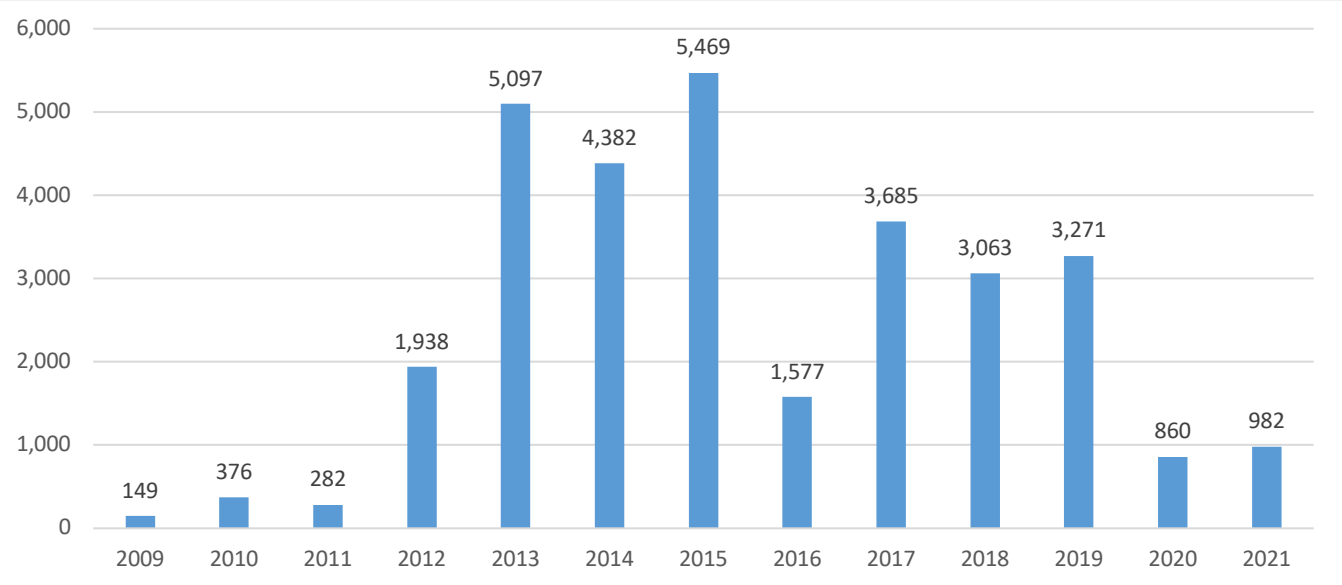

Figure 12: Multi-Family HET Rebates by Year

Commercial HET Rebate

Implementation date: July 7, 2008
Modified: March 1, 2015

This rebate program is designed to encourage commercial/industrial customers to retrofit older 3.5 or more gpf toilets with high-efficiency models. Only WaterSense labeled, high-efficiency tank-type toilets or flushometer valve/bowl combinations rated by Maximum Performance (MaP) testing at 800 grams or more qualify for the rebate, which use 1.28 gpf or less.

Program Activity:	2021	Cumulative
Number of HETs Retrofit:	806	4,551
Expenditure:	$114,000	$439,746
Estimated Gallons Saved:	7.3 million	307 million
Estimated Acre-Feet Saved:	22	943

Customer Payback: The average cost of commercial HETs purchased by participants was $127. The cost of qualifying toilets typically starts at $75. Total annual water and sewer savings per retrofit is $85 with, on average, a payback period of just over half a year after the $75 rebate.

Updated Commercial HET Retrofit Savings for FY 2015-16:
Differentiated water savings were calculated for flushometer-type and gravity-tank or pressure assist-tank types based on the CII estimated toilet savings in the CCTF 2006 report. These estimates were based on ULFTs (1.6 gpf), so a 20% additional savings is added for HETs (1.28 gpf) resulting in 50 gpd for flushometer-type toilets and 23 gpd for gravity-type and pressure-assist tank toilets. The new calculations for determining water savings for flushometer-valve type toilet retrofit are 50 gpd or 16,425 per annum and 23 gpd or 8,030 gallons per annum for each gravity-tank and pressure assist-tank type toilet.

Outreach and Promotion: The same point-of-sale displays are used to promote all high-efficiency toilet rebates. Similar to the multi-family HET program, a customized analysis is provided to the customer. The analysis considers current water usage, a fixture count and behavior assumptions to provide each customer with return-on-investment calculations to help customers make informed decisions.

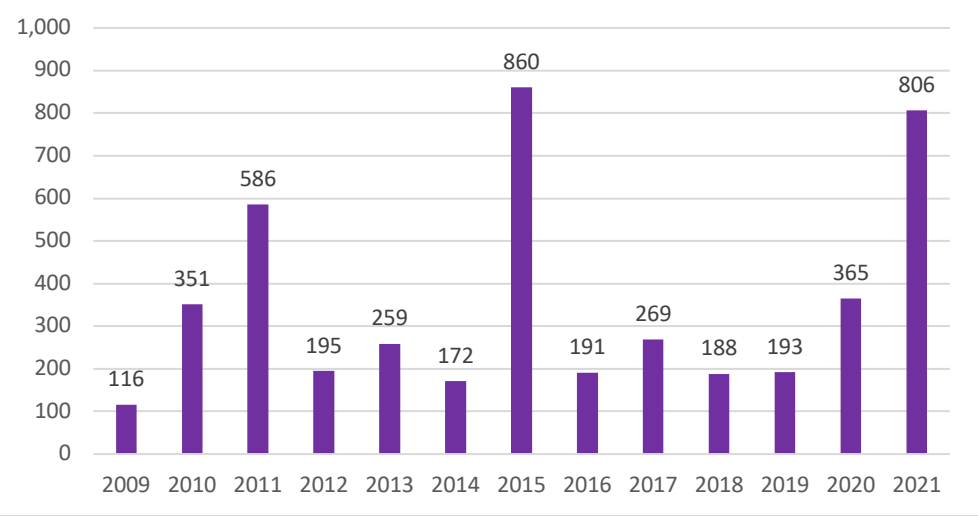

Figure 13: Commercial HET Rebates by Year

High-Efficiency Urinal Rebate

Implementation date: January 1, 2011
Modified January 1, 2013; modified March 1, 2015

This rebate program is designed to encourage commercial customers to retrofit high water-use urinals with high-efficiency models.

Program Activity:	2021	Cumulative
Number of HEUs Retrofit:	267	1,069
Expenditure:	$50,200	$313,600
Estimated Gallons Saved:	1.7 million	38 million
Estimated Acre-Feet Saved:	5	118

Effective January 1, 2013, the rebate was increased from $200 to $500 and the range of options expanded to include all WaterSense labeled, as well as waterless models.
Effective March 1, 2015 the rebate was changed back to $200, which is more in line with the commercial HET rebate.

High-Efficiency Urinal Retrofit Savings: The calculation for determining water savings for each retrofit is 17 gpd or 6,206 gallons per annum. This number has been adjusted from the previous number of 49 gpd to reflect updated savings estimates provided in the AWE Conservation Tracking Tool 2.0. This number compares closely with a study completed in California that looked at potential savings from large-scale urinal retrofits.

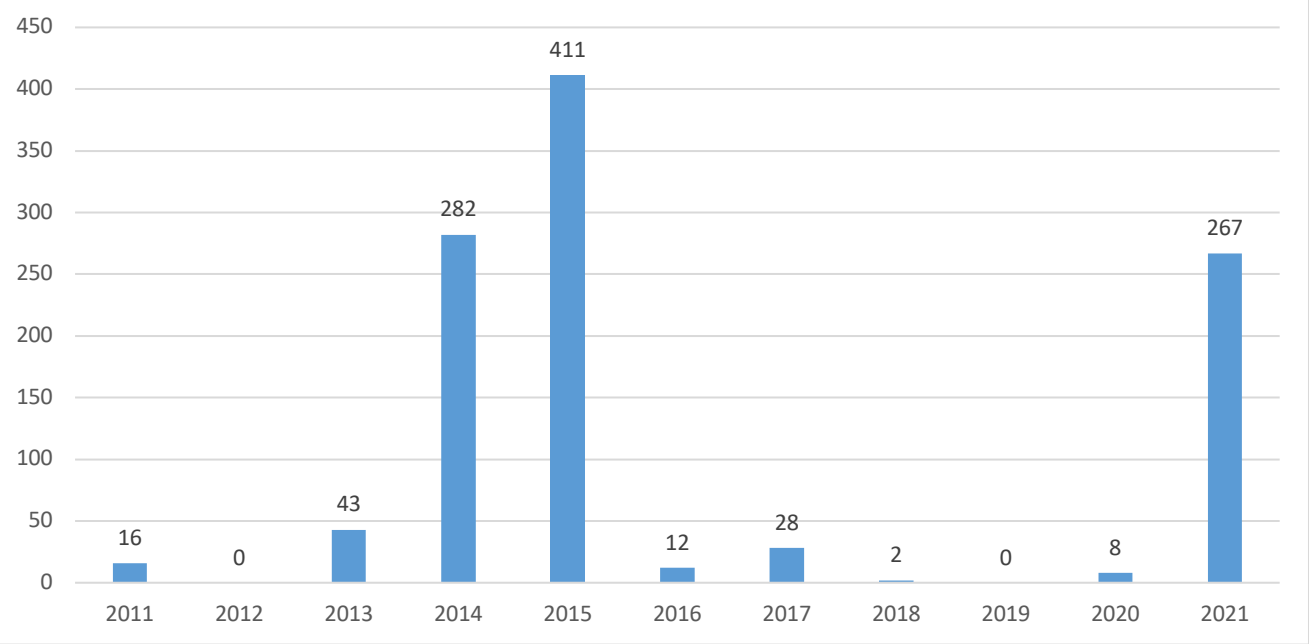

Figure 14: High-Efficiency Urinal Rebates by Year

Clothes Washer Rebate

Implementation date: August 1, 2015

This rebate is designed to offset the difference between purchasing conventional clothes washers and high-efficiency models.

Program Activity:	2021	Cumulative
Number of Clothes Washers:	1,090	9,125
Expenditure:	$218,000	$1.8 million
Estimated Gallons Saved:	7.7 million	254 million
Estimated Acre-Feet Saved:	24	779

Effective August 1, 2015, Tucson Water began offering residential customers a $200 rebate for purchasing a qualifying high-efficiency clothes washer, designated by the Consortium for Energy Efficiency (CEE), which specifies tiers of efficiency based on both water and energy use. *Staff is reviewing current clothes washer rebate policies to address the evaluation finding that customers save significantly less water when they replace an existing front-load machine with a new front-load machine, than if they replace a top-load machine.*

Customer Payback: The average cost of clothes washers purchased by participants was $796. The cost of qualifying clothes washers typically starts at $450. Total annual water, sewer, and energy savings per clothes washer is $116 with, on average, a payback period of five years after rebate.

Clothes Washer Savings:
The calculation for determining water savings for each purchase is 19.3 gpd or 7,043 gallons per annum. This assumption is from the Alliance for Water Efficiency that has used this value in their Conservation Tracking Tool 2.0. This value is a mid-range estimate, as published literature has indicated both higher and lower potential savings.

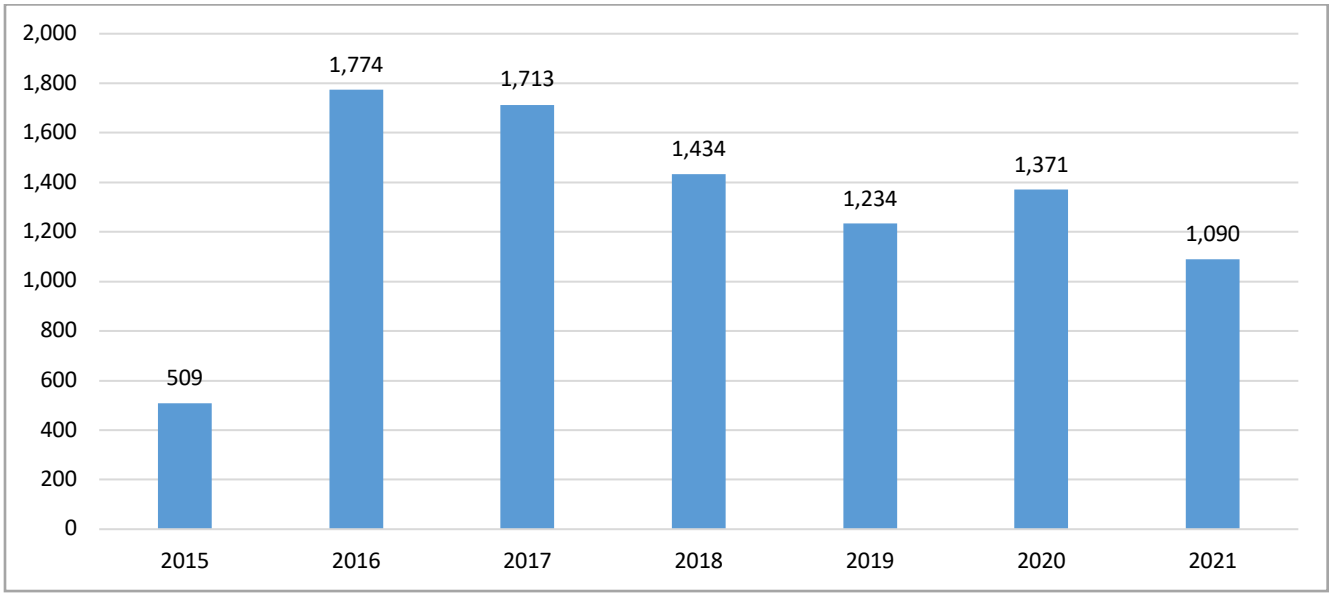

Figure 15: Clothes Washer Rebates by Year

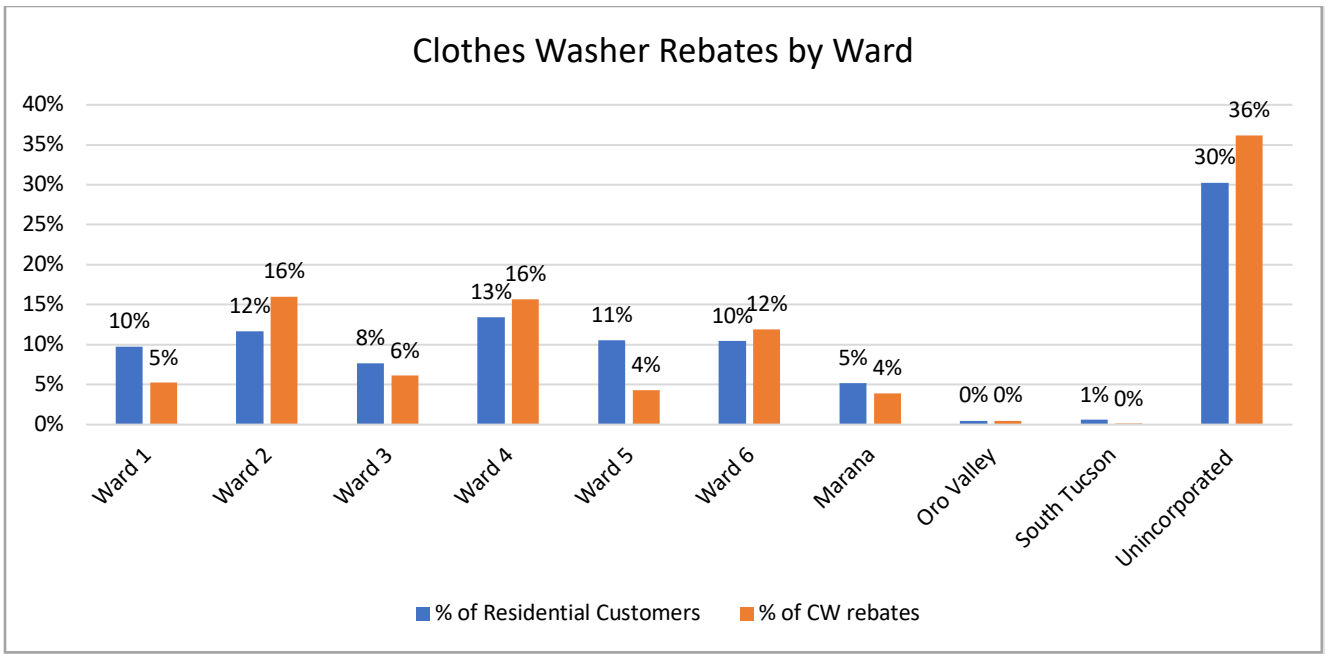

Figure 16: Clothes Washer Rebates by Ward displays the percent of rebates provided compared to the percent of single-family customers in each ward or other political boundary served by Tucson Water.

Gray Water Rebate

Implementation date: January 1, 2011
Modified: January 1, 2013

This rebate program is designed to encourage homeowners to install gray water systems for landscape irrigation. Beginning January 2013, the rebate amount increased from one-third of the cost up to $200 to one-half the cost up to $1,000. Participation in the program has remained low.
To be eligible for the gray water incentive rebate program, applicants must attend a two-hour workshop. Qualifying workshops are currently offered through Watershed Management Group.

Program Activity:	2021	Cumulative
Approved Applications:	20	192
Expenditure:	$11,437	$99,685
Estimated Gallons Saved:	272,300	16 million
Estimated Acre-Feet Saved:	1	49

Customer Impact: Of the total amount of waste water generated in a typical home, clothes washers, showers, and hand-washing sinks illustrated in Figure 18, approximately 34 percent can be re-used as gray water for landscape plants. Most applicants are installing laundry-to-landscape systems, which can recycle 12-16 percent of household use directly from clothes washers.

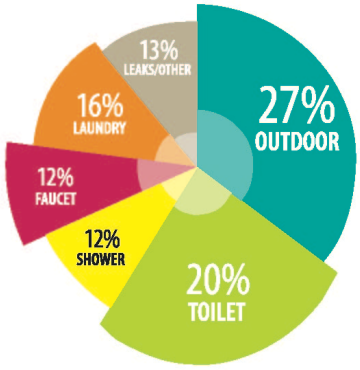

Figure 17: Typical Single-Family Water Use

Gray Water Savings:
The calculation for determining water savings for each rebate is 37.2 gpd or 13, 615 gallons per annum.

Most gray water systems approved for rebate are installing laundry-to-landscape systems that divert clothes washer water to the landscape instead of the sewer system. This savings number is calculated by multiplying the percent end use of clothes washers (16%) and Tucson's GPCD, to get 13.5 GPCD. This number is multiplied by the average persons per single-family household (2.76).

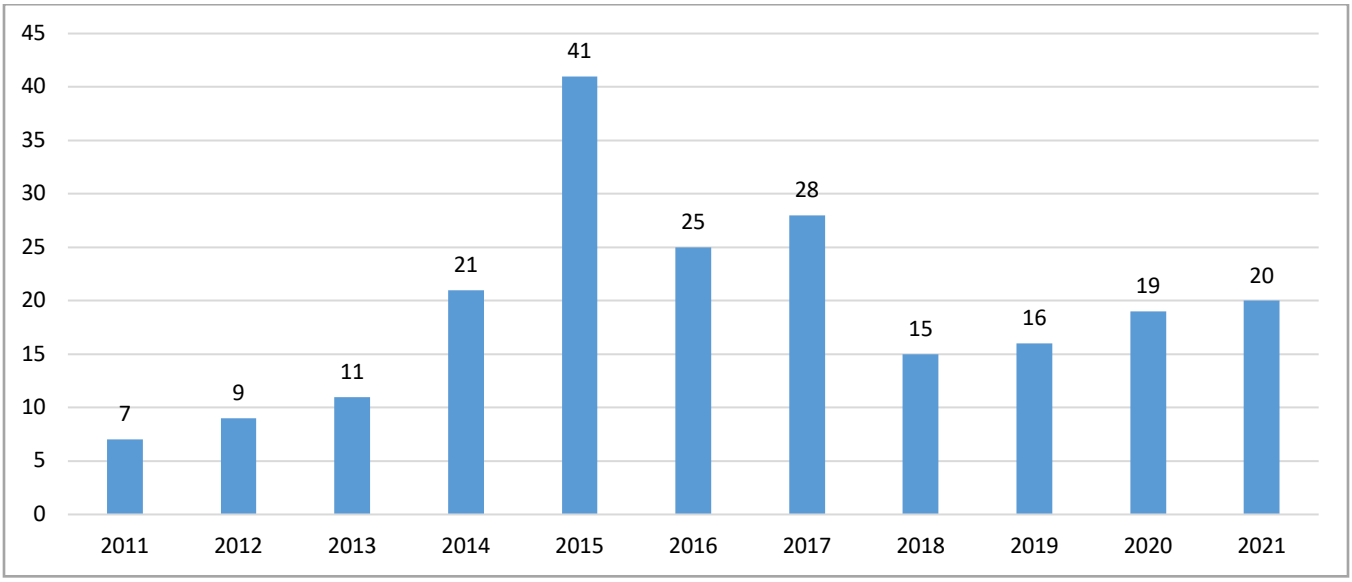

Figure 18: Gray Water Rebates by Year

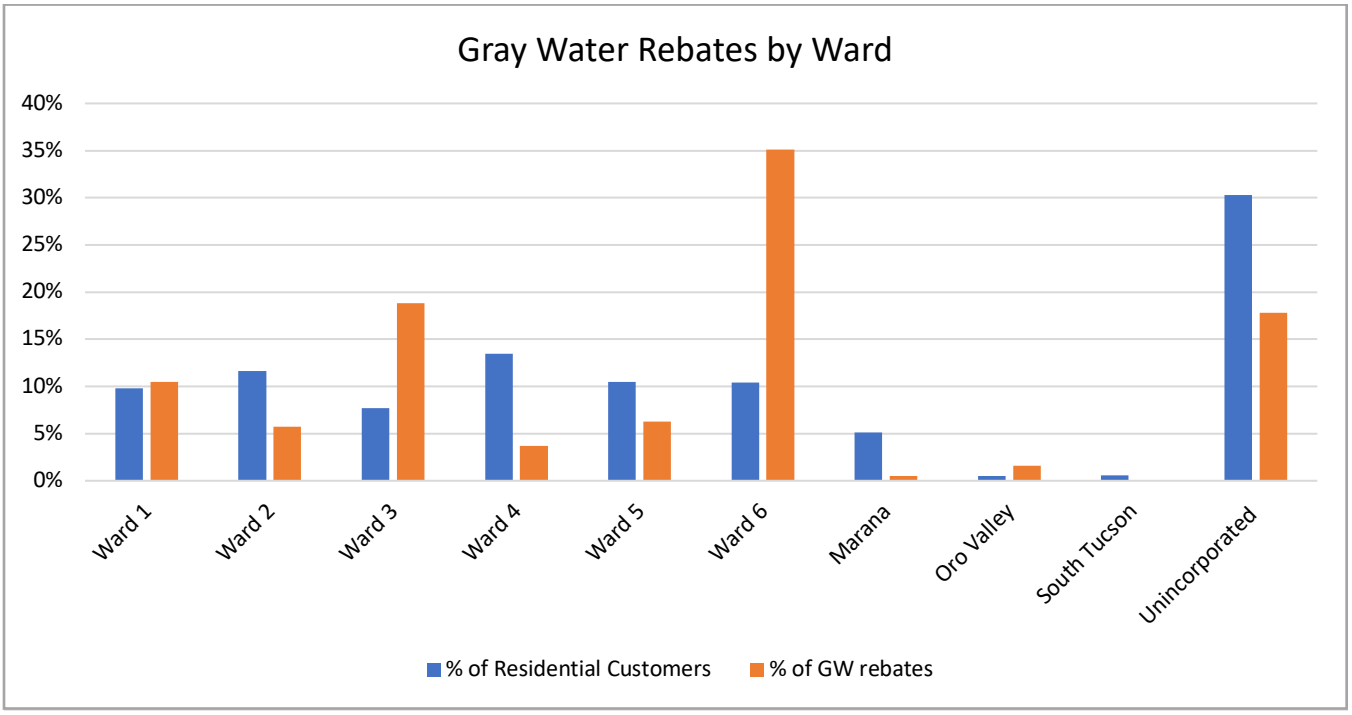

Figure 19: Gray Water Rebates by Ward displays the percent of rebates provided compared to the percent of single-family customers in each ward or other political boundary served by Tucson Water

Customized Commercial Efficiency Program

Implementation date: January 1, 2016
Tucson Water's customized commercial efficiency provides information, resources and incentives to help commercial customers reduce water use. audits identify water and financial savings opportunities for organizations and businesses communicated through a Water Efficiency Recommendations Report.

Program Activity:	2021	Cumulative
TAP Customers:	1	45
Expenditure:	$19,200	$84,048
Estimated Gallons Saved:	676,128	31.9 million
Estimated Acre-Feet Saved:	2	98

Water Audits

The City of Tucson updated its Drought Preparedness and Response Plan in 2020 to align with current Colorado River Basin indicators, primarily driven by the 2019 Drought Contingency Plan. Conservation staff is preparing for current and future tiers of drought response (currently the City is in Tier 1). Tier 1 drought includes providing targeted conservation information for customers who exceed water use guidelines and Tier 2 drought includes providing targeted audit assistance for customers who exceed water use guidelines. For more information:

https://www.tucsonaz.gov/water/drought-preparedness

In 2021 conservation staff, with the assistance of Cascadia Consulting Group, audited 95 city facilities to identify efficiency opportunities and demonstrate the city's leadership in preparing for future stages of drought.

Resources

As another Drought Plan measure, staff is working on a landscape water budget application that will identify commercial customers whose water use exceeds their water budget target and will develop targeted outreach to these customers.
To meet the demand for commercial audits the staff is also developing a process for conducting desktop audits that will provide a review of consumptive history and recommendations as a first step before field audits are scheduled.

Incentives

Rebates help offset the initial costs of installing water-saving hardware, equipment, and systems and amounts are calculated based on estimated water savings to ensure program cost-effectiveness.

All technologies and retrofits that can prove real water savings are considered for a rebate including the HET, urinal, and clothes washer rebates, which are already in place. Conservation staff has been doing more commercial audit training and reviewing conservation opportunities with commercial customers that request a water audit.

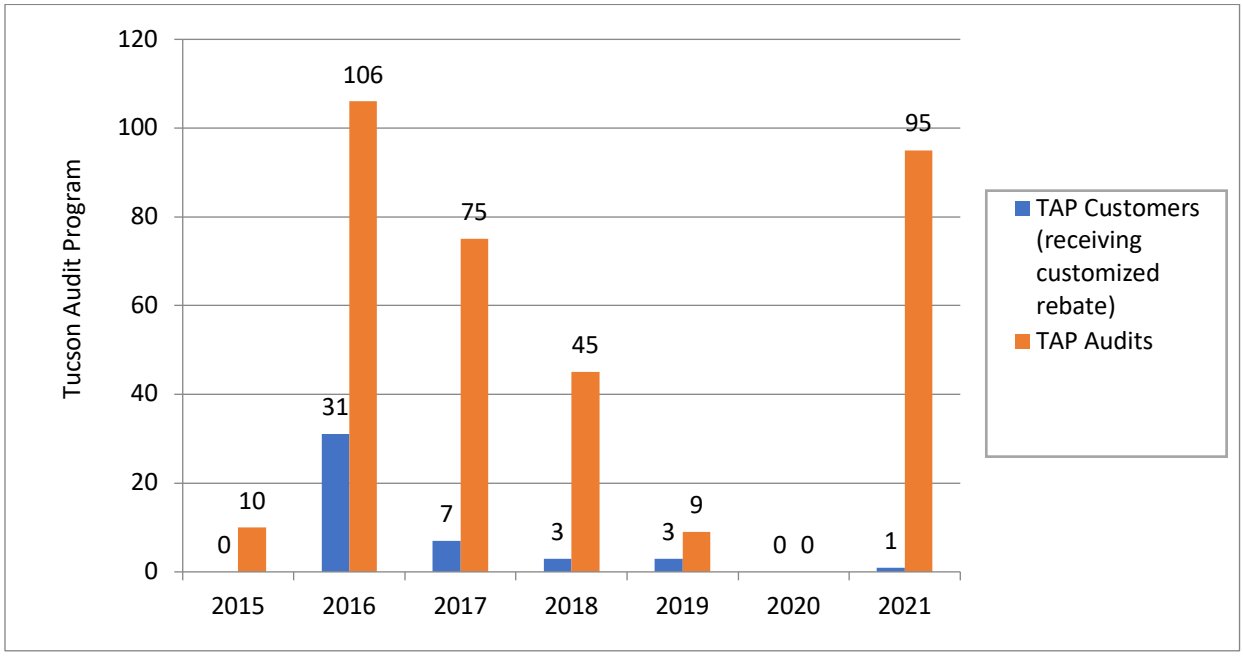

Figure 20: TAP Custom Commercial Rebate and Audits by Year

Rainwater Harvesting Rebate Program

Implementation date: September 27, 2011 Modified June 1, 2013; modified July 1, 2015

The residential rainwater harvesting rebate program was introduced in June 2012, retroactive to September 27, 2011. The program was expanded in July 2015, to include curb cuts/core drilling and small commercial customers.

Program Activity:	2021	Cumulative
Approved Applications:	310	3,160
Expenditure Level 1:	$15,325	$43,574
Expenditure Level 2:	$393,392	$3,509,877
Expenditure L-I Level 1:	-	$25,892
Expenditure L-I Level 2:	$6,434	$305,223
Limited-Income Grants	$10,603	$51,820
Estimated Gallons Offset:	2.5 million	103 million
Estimated AF Offset:	7	315
Gallons of Storage:	497,581	4.2 million

Tucson Water will rebate qualifying residential rainwater harvesting system costs under two levels of funding:

- Level 1 – Simple/Passive (earthworks) will rebate 50 percent of the cost of eligible material and labor up to $500
- Level 2 – Complex/Active System (tanks) will rebate system costs up to $2,000 based on gallon capacity:
- $0.25 per gallon capacity of 50-799 gallon tanks
- $1 per gallon capacity of 800 gallon and larger tanks

Applicants may apply for both a passive and active rebate not exceeding $2,000 for the combination. Applicants must attend an approved three-hour workshop to qualify for the rebate program. Fifty-nine workshops were held this fiscal year and 892 people attended; six workshops were held in Spanish. Qualifying workshops were offered in English through Smartscape and Watershed Management Group, and in Spanish by SERI.

Rainwater Harvesting Savings:
Preliminary tracking of water use for systems installed did not show a net reduction in water use compared to two control groups (all single-family and high use).

A statistical analysis was done in 2017 and determined that savings are 10-12 ccf/year for participants who installed tanks and have not moved since their installation.

The current estimated water savings is calculated from the assumption that tanks will fill, on average, five times per year, based on historic weather and assumed tank usage patterns. This "engineering estimate" provides a total savings number, which when divided by the number of rebate participants to-date, yields 7.4 ccf/year of savings per customer – significantly less than the new statistical findings for the group

Low-Income Rainwater Harvesting Grant & Loan Program

In FY 14-15, Tucson Water partnering with SERI, conducted a pilot to develop a low-income rainwater harvesting program. SERI continues to provide services for this program, including qualifying customers based on low-income status and offering design consultations and installation services for interested families.

In 2021, the Low-Income Rainwater Harvesting Grant and Loan Program continued not having in-person activities and experienced a slowdown in installation and working with families. Additionally, a barrier to implementation has been a backorder of cisterns with reliable vendors due to global supply chain problems. Online workshops were provided, six in English and three in Spanish.

Installations have remained low and SERI is working with the community to adapt to the new challenges and increased costs. Only four installations were completed and four grants and four loans were provided. Recognizing the connection between water harvesting and growing vegetation, Tucson Water infused funding and directed SERI to include vegetation as part of the program. Households can now receive one tree and two shrubs at no additional cost.

Low-Income Pilot Savings:
Preliminary tracking of water use for the thirty-one participants compared to the class average usage was about 0.8 Ccf more per month than the class average. Overall, the passive water harvesting installations have not shown a decrease in usage since installing the systems.

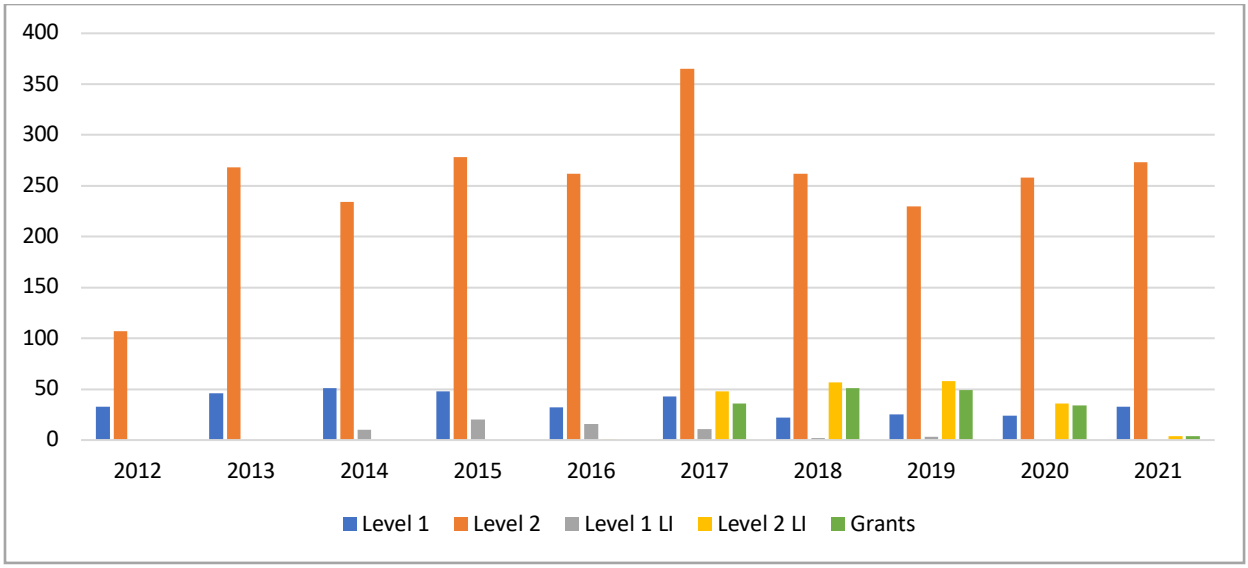

Figure 21: Rainwater Harvesting Rebates by Year

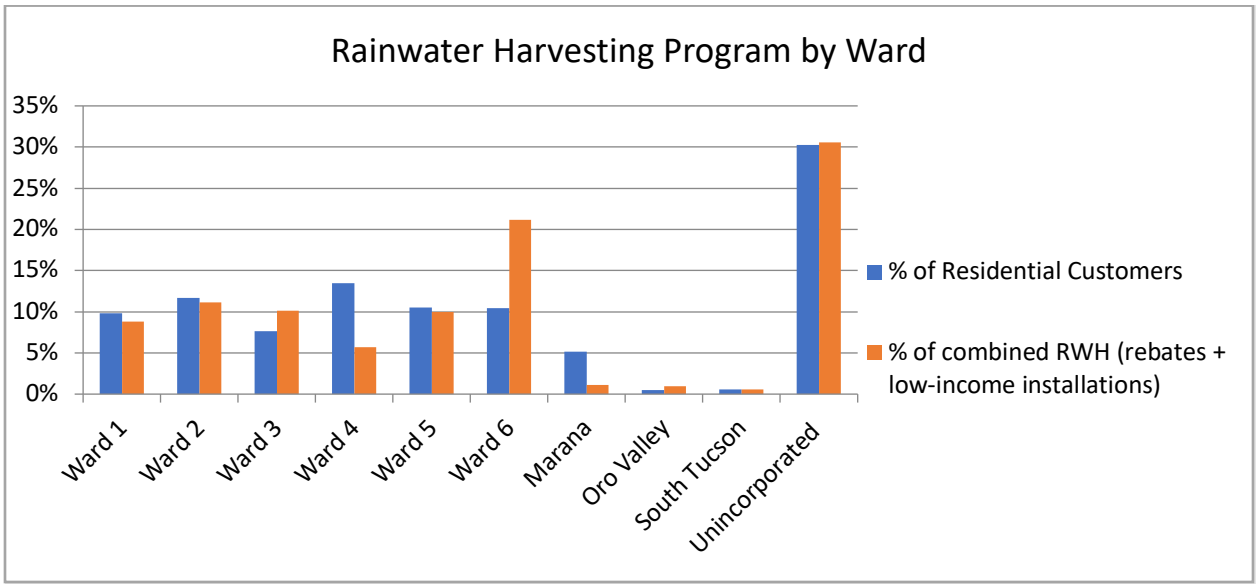

Figure 22: Combined rainwater harvesting projects, including rebates and grants/loans for low-income customers compared to the percent of single-family customers in each ward or other political boundary served by Tucson Water.

Zanjeros

The Zanjeros continue to serve as PICO's field team, providing customer water audits and water waste enforcement throughout the community.

Water Audits

Water audits are requested by customers, usually driven by high bill and high consumption concerns. Audits are scheduled in two-hour blocks, scheduled at the customer's convenience. The onsite audit includes a download and review of hourly, 40-day water use recorded at the meter when available, a review of all onsite water uses, identification of leaks and additional efficiency opportunities at the property. A total of over nearly 800 audits were performed in 2021; 768 were for residential customers and 22 were commercial audits.

Zanjeros audit savings:
A recent analysis found that single-family customers who have received a water audit save 1.7 ccfs (over 1,200 gallons) per month for at least two years following a water audit. While the water audit intervention does not account for 100% of these savings because our team does not repair leaks that are found, they often help identify the source of the customer's high bill.

Water Waste Enforcement

Enforcement of the Water Waste Ordinance (27-15) is under the purview of Conservation Program staff. Water waste typically involves overwatering, malfunctioning irrigation systems, hose washing of hard surfaces, and misting systems operating in unoccupied areas. Emails and phone calls are the two most common ways that water waste is reported. Reports of water waste also come in through email and the See Click Fix phone app. The fine structure for a first offense is a minimum of $250. Subsequent offenses within three years are a minimum of $500.
Reporting issues with the current database may have resulted in fewer visits being documented than actually happened. Conservation staff is working with IT on transferring the water waste database to an online system.

Professional Training

The Zanjeros expanded on the intensive training they received on auditing commercial facilities, by supporting the city facility water audits and deploying the ultrasonic flow meter at commercial locations where continuous readings are useful in determining how water is being used at the site. The Zanjeros team can provide audit services to a wide range of commercial customers, which supports Tucson Water's drought response plan readiness. Currently, two of the four Zanjeros have their National Green Infrastructure certification and all earned the professional rainwater harvesting design certification course offered by Watershed Management Group.

Demonstration Site

PICO, led by the Zanjeros team, installed two rainwater harvesting demonstrations at Tucson Water's new SHARP facility that recharges recycled water. These projects collect water from the ramadas, which is stored for irrigation use in two cisterns. This multi-benefit site is open to the public for walking and biking and provides good

visibility for demonstrating rainwater harvesting practices.

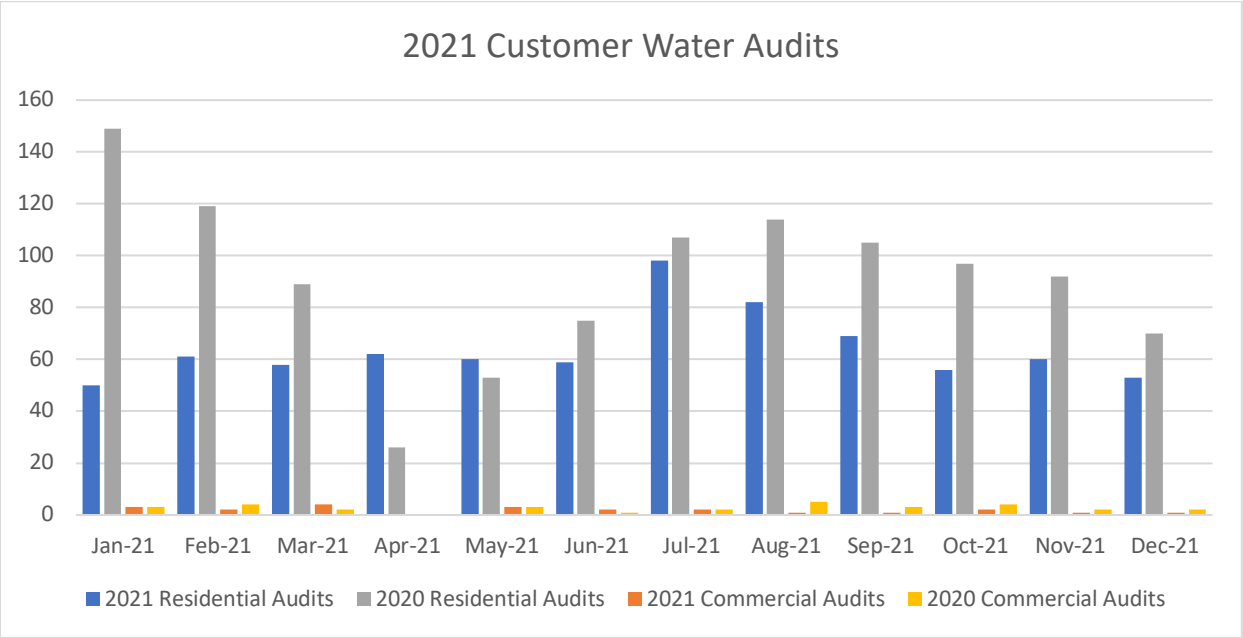

Figure 23: Graph of monthly audits completed by the Zanjeros team for 2021, including 2020 data for comparison.

Community Education & Outreach Programs

Tucson Water continues to contract several partners that provide outreach, conservation activities and educational services throughout our service area.

Tucson Water partners with Arizona Project WET (APW) and Environmental Education Exchange (EEExchange) to offer youth education programs, and Smartscape which offers adult education for landscape professionals and residents. Both APW and EEExchange ensure that all programming meets Arizona Department of Education K-12 Standards. COVID-19 variants have continued to present challenges for APW, EEExchange and Smartscape. They have learned to adapt quickly and have become more flexible in how they deliver content and services.

The low-income conservation programs are administered by SERI and CHRPA. SERI manages the Low-Income Rainwater Harvesting Grant and Loan Program as discussed on page 30. CHRPA manages the free High-Efficiency Toilet Installation Program (described on page 18), as well as the newer Emergency Repairs Program. Both organizations use the same qualification criteria that is now aligned with Tucson Water's other income-based assistance programs.

Tucson Clean and Beautiful and Watershed Management Group both implement water harvesting and green stormwater infrastructure projects in conjunction with neighborhoods and schools.

Figure 25 illustrates the total annual engagement of students, teachers, parents and the general public, giving an indication of the expansion and increased investment in Tucson Water's education programs with a dedicated Conservation Fund. Together, our education partners have reached over 500,000 students, teachers and community members in the last decade.

Dynamic maps illustrating the geographic distribution of school programs are available on the website. To access the school program map, go to: tucsonaz.gov/water/conservation.

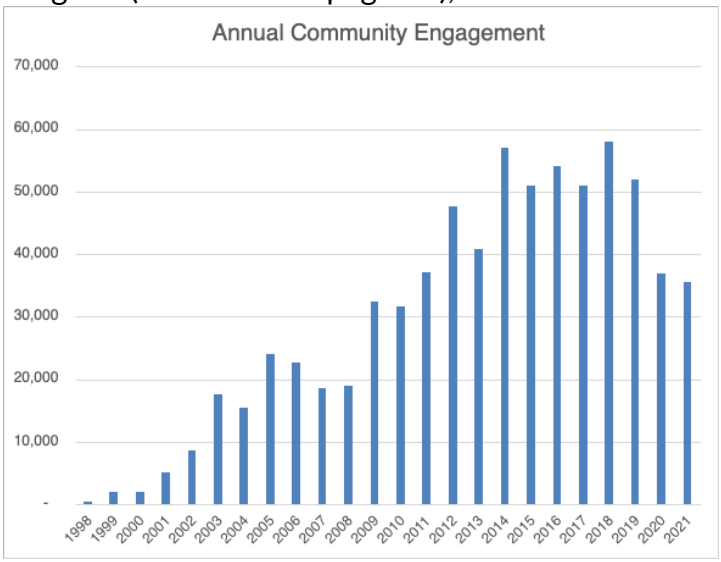

Figure 24: Bar graph showing the yearly impact of the education programs funded by Tucson Water.

Arizona Project WET (APW)

Tucson Water and The University of Arizona Water Resources Research Center established the first intergovernmental agreement (IGA) with APW in 2006. Today, APW provides seven primary programs to elementary through middle schools throughout Tucson, as well as community outreach through various events. Since 2006, with Tucson Water's collaboration and support, APW has engaged over 6,000 teachers, nearly 300,000 students, and over 30,000 adults in STEM-based water education in the Tucson Water service area.

2021 Activity:

Students Reached	7,492
Teachers Reached	62
Adults Reached	172
Audit Projected Water Savings[1]	810,564

APW provides teacher training and direct student outreach to teachers and students in the Tucson Water service area to develop stewardship and STEM literacy in K-12 learners. Teacher trainings, or professional development, provide motivated teachers with the knowledge and skills to deepen their students' understanding of local water issues. Direct engagement provides classrooms with interactive presentations by trained educators, as well as exploratory field trips Tucson Water's Sweetwater Wetlands.

Direct student educational programs include:

- 2nd grade Land Water & Watersheds
- 4th grade Water Festival
- 3rd – 5th grade Hands-on Groundwater
- K – 12th grade Discovery Program – Sweetwater Wetlands
- K – 12th grade Aqua STEM Rainwater Harvesting
- 6th – 12th grade Groundwater Simulator
- 6th – 12th grade Water Scene Investigation

APW has continued to adapt to the challenges presented by the pandemic. They have developed a number of virtual approaches to presenting water education including:

- Online learning tools for students and the community, highlighting the Virtual Arizona Water Festival Event, which includes a suite of videos, online activities, and a short assessment for students and teachers.
- Online Water Scene Investigation program that invited families to conduct a home water audit and install new faucet aerators.
- Virtual Professional Development for educators
- Virtual classroom support for teachers implementing APW curriculum from their professional development experiences.

[1] Water savings estimate (in gallons) is from the Water Scene Investigation program after retrofitting aerators in student's homes.

Environmental Education Exchange

The EEExchange began working under contract with Tucson Water in 1998 to develop and manage water conservation education programs. The three current programs are provided for grades one through eight, in multiple school districts throughout Tucson. Additionally, since the partnership began, EEE has engaged nearly 250,000 students in Tucson Water-sponsored water education programs throughout the service area.

2021 Activity:	
Total Students Reached	27,040
Water Smart Kids	11,813
Our Water, Our Future	6,895
Watching Our Water	8,332
Teachers Reached	260

1st through 3rd Grade: Water Smart Kids

Water Smart Kids is designed for our community's youngest learners, in honor of the animated talking water drops that take students on a journey beginning in the clouds and ending in the kitchen sink. The presentation focuses on groundwater model activities in which students experience changes in how people have used water over time. At the end of this hour-long program, the presenter passes out student activity booklets and a reusable cup for each student that encourages them to "*Brush up with Just One Cup!*"

4th and 5th Grade: Our Water, Our Future

Our Water, Our Future provides an interactive presentation to upper elementary students with a focus on our water cycle and our sources of water. At the end of this hour-long presentation with Dr. Faucet, students receive a shower timer and a reminder to be mindful about water use when showering. An exciting addition to *Our Water, Our Future* is a full-color activity book given to each student at the end of the presentation.

Middle School: Watching Our Water

The hour-long program formerly called *El Tour de Agua* has been renamed *Watching our Water* and focuses on water sources, water recycling, and water conservation. Students are taught to question if their water sources are reliable, safe, and sustainable. New multimedia technology has been incorporated, as well as classroom activities to more deeply engage students. Teachers show a pre-visit video to students for background information, and follow up with a post-visit lesson on water conservation (using the Shower Flow Kit materials that are student giveaways).

EEE has continuously adapted to the challenges posed by the pandemic. They have developed a number of approaches to support both in person and virtual learning such as:

- Scheduling flexibility so that teachers can switch between classroom presentations and virtual presentations
- Livestream Recordings based on in-person scripts that were available via Tucson Water's Facebook page and YouTube.
- New Student Learning Guides developed for each of the three programs that include full-color pages, new characters and new activities with QR codes that link to videos with related content.

Smartscape

Since 1989, Tucson Water has executed a series of IGAs with the University of Arizona for a landscape water conservation program designed to reduce water consumption. With this partnership, Tucson Water launched a WaterSmart program in 1990 aimed at homeowners to broaden the community's water conservation ethic. By the end of 1992, the need for training specifically tailored to landscape professionals was identified. In twenty-five years, Smartscape has trained nearly 3,500 landscape pros and provided classes for over 6,000 community members.

2021 Activity:	
Professional Workshops	67
Pro Workshop Attendees	283
Pro Certificates	188
Residential Workshops	13
Workshop Attendees	323

Smartscape's *"A Training Program for Landscape Professionals"* was launched in both the Tucson and Phoenix areas in 1994 and was developed collaboratively by Tucson Water, the University of Arizona Cooperative Extension, Arizona Municipal Water Users Association, the Arizona Nursery Association, the Arizona Landscape Contractors Association, and industry representatives. The program is a comprehensive, research-based training program that instructs landscape professionals in the fundamentals of design, installation, irrigation, and maintenance of low-water-use landscapes. Key components of the program are the need for efficient water use, the regulatory environment, methods of water conservation in the landscape, and the principles of Xeriscape.

The Pro series of eight classes are taught by local industry experts in both English and Spanish, which include:

- Plants, Soils, and Water
- Landscape Irrigation Systems
- Landscape Water Management
- Desert Adapted Plants
- Maintaining Desert Adapted Plants
- Plant Disorders
- Landscape Design and Renovation
- Plant Selection and Installation

In 2018, Smartscape implemented an exam for the Pro series, requiring course participants to pass a closed-book exam at the completion of the course. The results have been positive and move the program in the direction of requiring pros to demonstrate a base level of knowledge and proficiency.

Additional advanced classes for professionals include:

- Advanced Irrigation (English and Spanish)
- Advanced Plant ID & Selection
- Turf Irrigation Management
- Urban Tree Management (English and Spanish)
- NEW: Green Stormwater Infrastructure Maintenance

Smartscape was presented with an exciting opportunity to expand on their conservation education by serving as CO-PI with the Arizona Institutes for Resilience to take on the development of a new professional advanced course focused on the proper care and maintenance of Green Stormwater Infrastructure. Throughout this year, Smartscape delivered 16 of these classes, twelve in English and four in Spanish with a total of 111 professionals trained. This collaboration provided enhanced training opportunities on conservation efforts that align with our city's needs. Landscape

contractors who took advantage of this are able to participate in the city's larger effort of maintaining existing GSI features in Tucson neighborhoods.

Additionally, Smartscape launched the Tucson HOA Landscape Transformation Pilot Program which provides guidance on transitioning to water efficient landscapes. Specifically, the program aims to provide tools on doing initial landscape assessments to plan for a sustainable conversion of the landscape, tailored training through Smartscape classes, strategic planning support, along with potential incentives from our utility.

CHRPA Emergency Plumbing Repairs

The newly expanded Emergency Plumbing Repairs program run administered by CHRPA launched at the end of 2019, positioning CHRPA respond to a variety of needs during the unanticipated pandemic and a time of increased need. Plumbing repairs made possible by the Tucson Water Emergency Repairs Program were a key part of this work. This program covers the cost of labor and materials for plumbing repairs for low-income customers. In 2021 CHRPA provided 327 emergency repairs to 167 households that range from replacing a toilet float to re-piping a home; the average repair was $465.

CHRPA workers hear stories nearly every day of exponentially increased water bills leading to water off in a home, or families being unable to flush a toilet or take a shower for weeks, or elderly folks using the bathtub to wash dishes despite the fall risk because the kitchen sink leaks. For many of their clients, turning the water off to avoid a high bill or hiring a costly plumber also means losing access to evaporative cooling. The Emergency Repairs Program means CHRPA crews can respond quickly to the most urgent need, increasing comfort and even saving lives.

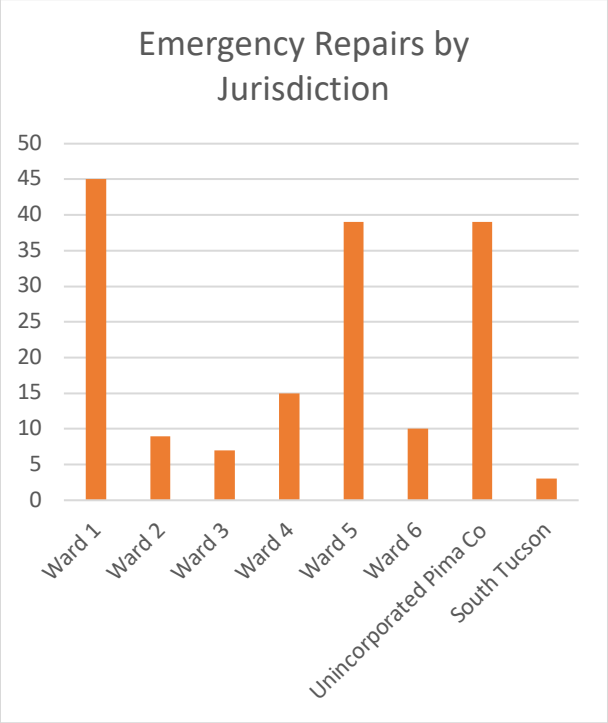

Figure 25: Breakdown of Emergency Repairs by Jurisdiction in 2021

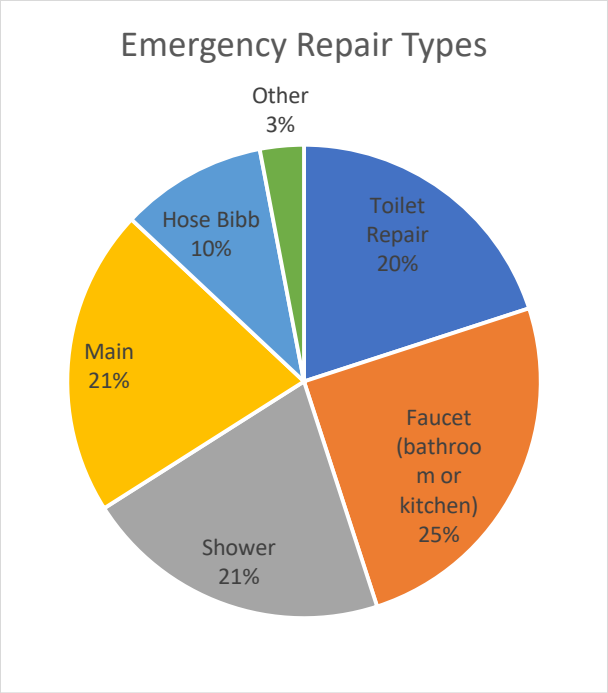

Figure 26: Breakdown of Emergency Repairs done by CHRPA in 2021

Green Stormwater Infrastructure Mini-Grant Program

(formerly the Neighborhood-Scale Stormwater Harvesting Program)

The Neighborhood-Scale Stormwater Harvesting Program (NSSH) was closed out on June 31, 2020 and relaunched on January 1, 2021 under the new program name Green Stormwater Infrastructure (GSI) Mini-Grant Program. The GSI MG program continues to serve the community through facilitation and installation of participatory, community-driven green infrastructure projects, but is moving forward with an enhanced focus on equity, community outreach, and project maintenance.

The Mini-Grant Program is a re-tooling of the Neighborhood Scale Stormwater Harvesting (NSSH) Grant Program, and many lessons learned through this previous grant have been carried forward into a strategic plan for the new program. This year's planning included restructuring the programs goals, strategies and measures of success around the equitable application of green stormwater infrastructure in building climate resilient communities. The program is moving forward with a deep and dedicated focus on developing methods to leverage the benefits of GSI for Tucson's most vulnerable communities, while building meaningfully participatory design strategies that empower and provide lasting benefits to neighborhoods where projects are built.

A total of eight community-driven green infrastructure projects were completed in 2021. This number is largely due to the ending of the NSSH program (June 2020) and the relaunch of the grant program as GSI Mini-Grants (January 2021). Since launching the GSI Mini-Grant program in January 2021, TCB has engaged with 16 different neighborhood groups to support their applications to the program.

Table 7: Breakdown of activities by Ward supported by the GSI Mini-Grants Program.

	# of Moderate to High Priority Tree Equity Neighborhoods Engaged	Total Projects Initiated	Total Projects Completed	Funds Expended	Total Trees and Pollinator Plants Installed All Wards
Ward 1	2	2	1	$1,242	**176 Trees 802 Pollinator Plants**
Ward 2		1		$3,427	
Ward 3	2	4	1	$4,085	
Ward 4	1	2	1	$52,033	
Ward 5	1	4	2	$21,345	
Ward 6	1	9	3	$6,379	
Totals	**7**	**22**	**8**	**$88,511**	

WMG Schoolyard Water Harvesting Program

In conjunction with the partnership Tucson Water has with APW, Watershed Management Group currently has a contract to install rain gardens at schools in support of the Recharge the Rain program which provides professional development and curriculum support for participating teachers. WMG works with teachers, students and staff to design and build rain gardens at their schools, empowering students to better understand and enhance their school campuses. In 2021, rain gardens were installed at four schools: Sunnyside High School, Amphitheater High School, Satori School and John E White Elementary School.

Conservation Kits for Customers

In 2019 Tucson Water, in partnership with EEE, began mailing conservation kits to customers upon request. Customers complete a request form in English or Spanish, available on the Tucson Water website. These kits contain low-flow shower heads (up to 2), a 5-minute shower timer, toilet tank bags (up to 2) and leak detection dye tabs faucet aerators (up to 2). These kits were widely promoted in the Water Matters newsletter and on social media and resulted in a significant increase in items distributed over 2020. In 2021, kits were distributed to 2,121 customers; 2,002 requests in English and 119 requests in Spanish.

Shower heads	2,621
Shower timers	2,370
Toilet tank bags	2,785
Toilet tank dye tabs	3,346
Faucet aerators	3,139
Total	**14,261**

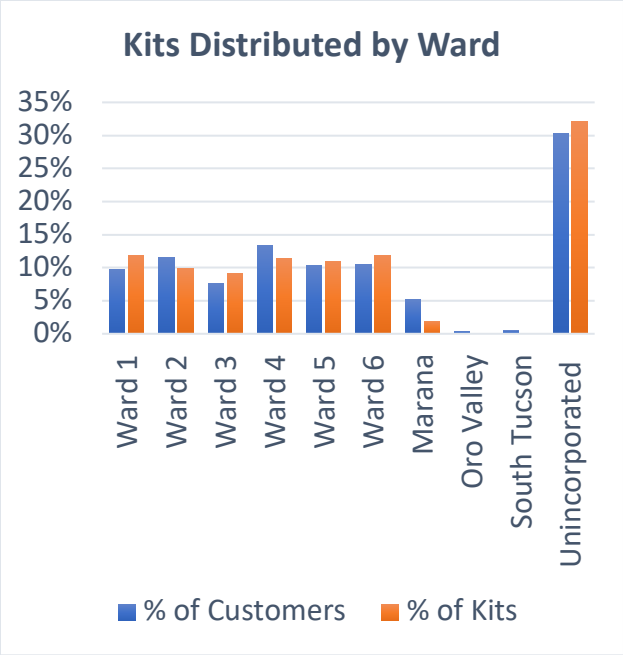

Figure 27: Kits Distributed by Ward displays the percent of kits provided compared to the percent of single-family customers in each ward or other political boundary served by Tucson Water.

Community Garden Pilot Program

In 2018 Tucson Water launched a pilot program to offer more affordable potable water rates and infrastructure to qualifying community garden customers. This pilot program was developed through engagement with representatives from local community gardens, in support of Plan Tucson goals to increase urban agriculture and better serve disadvantaged communities. Gardens must be within city limits, have a potable meter feeding the garden only and backflow unit, and meet the definition of a community garden, as defined in the City's land use code. At the end of 2021 13 gardens had been approved for the pilot community garden rate, including two that entered into payment plans, one for their backflow unit and one for both the meter and backflow. For more information, visit: tucsonaz.gov/water/garden.

Flume Flow Device Pilot Project

Tucson Water launched an employee pilot project in August of 2021 to provide Flume

devices provide participants with real-time, accurate water use data that may help identify leaks and conservation opportunities. The device attaches to the water meter and communicates with a base in the home, which is connected to WiFi and communicates with a smart phone. Data about water usage is made available to users through the phone application and the user data will also be given to Tucson Water and Flume to help inform leak identification and for future Flume device use.

HOA Landscape Transformation Pilot Project

Together with Smartscape, Tucson Water is piloting an effort to help HOAs transition their landscapes conserve water and become more sustainable. Smartscape has developed an educational series for HOAs, along with a toolkit of resources to help HOAs establish contracts that adhere to Smartscape principles. Tucson Water is supporting this pilot by providing grants to two HOAs who have committed to landscape transformation projects and will also be monitoring water use before and after the landscape transformations occur.

Regional & National Collaboration

Tucson Water maintains active involvement with the Conservation Committee of the Arizona Municipal Water Users Association (AMWUA) and staff continues to attend meetings virtually. AMWUA has created a commercial conservation workgroup to address the needs and opportunities that exist with water conservation in the commercial sector and Tucson Water participates in those meetings as well.

Conservation staff participate in the Conservation Committee of AZ Water, the state chapter of AWWA. This voluntary committee provides networking, informational presentations and technical trainings for water conservation professionals throughout Arizona.

On a national level, Tucson Water is a member of the Alliance for Water Efficiency (AWE), which is a leader in advocating for effective water conservation policies and supports idea-sharing and program development amongst its members. Recently, AWE has worked to secure WaterSense authorization, supported national legislation on water conservation rebate tax issues, advocated against loosening plumbing fixture standards and continues to provide educational opportunities on various water conservation topics.

Retail Outreach and Promotion

A main avenue for promoting conservation and incentive programs has been placement of display racks at nurseries, plumbing supply, and home improvement retailers. Currently, Cirrus Visual serves as a brand ambassador for Tucson Water to ensure that point-of-sale displays are kept filled with the most current information on residential rebates and that employees are updated on any program changes. Displays at about 20 of the highest-demand retailers are stocked monthly with brochures and rebate applications. In total, Tucson Water has established relationships with 42 retailers in the service area. From tracking how customers learn about the rebate programs, staff knows that retailers are a very important part of program promotion; many customers do not know rebates exist until talking with an employee at one of our retail partners' stores.

Appendix A – Plan Tucson Policies Addressed with Water Conservation Programs

- E4: Build and maintain partnerships among neighborhood, community, business and regional institutions and programs to increase educational opportunities.
- G1: Provide the public with regular communication and sufficient information regarding policy, program, and project planning and decisions-making via multiple methods.
- G4: Increase participation of the traditionally underrepresented populations in policy, program, and project planning and decision-making.
- G6: Coordinate and collaborate with NGOs to increase public participation.
- G7: Develop and maintain strong partnerships with regional and local NGOs, including educational institutions, non-profit organizations, and neighborhood and citizen groups.
- EC9: Assess and address the vulnerability of the community's health and safety, economy, and natural resources to climate change, and develop assurances that vulnerable and disadvantages populations are not disproportionately impacted by climate change.
- WR2: Expand the use of alternative sources of water for potable and non-potable uses, including rainwater, gray water, reclaimed water, effluent, and stormwater.
- WR3: Expand effective water efficiency and conservation programs for City operations and for the residential, commercial, and industrial sectors.
- WR6: Integrate land use and water resources planning.
- WR7: Collaborate on multi-jurisdictional and regional water planning and conservation efforts.
- WR8: Integrate the use of green infrastructure and low impact development for stormwater management in public and private development and redevelopment projects.
- WR11 Conduct ongoing drought and climate variability planning.
- GI1: Encourage green infrastructure and low impact development techniques for stormwater management in public and private new development and redevelopment, and in roadway projects.
- GI4: Expand and maintain a healthy, drought-tolerant, low-water use tree canopy and urban forest to provide ecosystem services, mitigate the urban heat island, and improve the attractiveness of neighborhoods and the city as a whole.
- RR5: Pursue interim uses and/or green infrastructure on vacant and financially distressed properties.
- LT10: Support urban agriculture and green infrastructure opportunities in new development or redevelopment when appropriate.
- LT12: Design and retrofit streets and other rights-of-way to include green infrastructure and water harvesting, complement the surrounding context, and offer multi-modal transportation choices that are convenient, attractive, safe, and healthy.